UTAH OIL AND GAS CONSERVATION COMMISSION

REMARKS: WELL LOG _____ ELECTRIC LOGS _____ X _____ WATER SANDS _____ LOCATION INSPECTED _____ SUB REPORT/abd.

DATE FILED: MAY 27, 1997

LAND: FEE & PATENTED STATE LEASE NO. ML 45805 PUBLIC LEASE NO. INDIAN

DRILLING APPROVED: AUGUST 25, 1997

SPUDDED IN: 9.20.97

COMPLETED: 11.15.97 SWD PUT TO PRODUCING:

INITIAL PRODUCTION:

GRAVITY A.P.I.

GOR:

PRODUCING ZONES: 5920 - 6320' NAVAJO

TOTAL DEPTH: 6489'

WELL ELEVATION: 5765' GL

DATE ABANDONED:

FIELD: UNDESIGNATED

UNIT:

COUNTY: CARBON

WELL NO. HELPER STATE SWD 1 API NO. 43-007-30361

LOCATION 1131 FSL FT. FROM (N) (S) LINE, 2194 FWL FT. FROM (E) (W) LINE. SE SW 1/4 — 1/4 SEC. 3

TWP.	RGE.	SEC.	OPERATOR	TWP.	RGE.	SEC.	OPERATOR

GEOLOGIC TOPS:

QUATERNARY		Star Point		Chinle		Molas	
Alluvium		Wahweap		Shinarump		Manning Canyon	
Lake beds		Masuk		Moenkopi		Mississippian	
Pleistocene		Colorado		Sinbad		Humbug	
Lake beds		Sego		PERMIAN		Brazer	
TERTIARY		Buck Tongue		Kaibab		Pilot Shale	
Pliocene		Castlegate		Coconino		Madison	
Salt Lake		Mancos		Cutler		Leadville	
Oligocene		Upper		Hoskinnini		Redwall	
Norwood		Middle		DeChelly		DEVONIAN	
Eocene		Lower		White Rim		Upper	
Duchesne River		Emery		Organ Rock		Middle	
Uinta		Blue Gate		Cedar Mesa		Lower	
Bridger		Ferron Sand	2028	Halgaite Tongue		Ouray	
Green River		~~Frontier~~ ferron Coal	2078	Phosphoria		Elbert	
		~~Dakota~~ UP ferron	2182	Park City		McCracken	
		~~Buckhorn~~ -Fununk	2246	Rico (Goodridge)		Aneth	
		Cedar Mountain		Supai		Simonson Dolomite	
		Buckhorn		Wolfcamp		Sevy Dolomite	
		JURASSIC		CARBON I FEROUS		North Point	
Wasatch		Morrison		Pennsylvanian		SILURIAN	
Stone Cabin		Salt Wash		Oquirrh		Laketown Dolomite	
Colton		San Rafeal Gr.		Weber		ORDOVICIAN	
Flagstaff		Summerville		Morgan		Eureka Quartzite	
North Horn		Bluff Sandstone		Hermosa		Pogonip Limestone	
Almy		Curtis				CAMBRIAN	
Paleocene		Entrada		Pardox		Lynch	
Current Creek		Moab Tongue		Ismay		Bowman	
North Horn		Carmel		Desert Creek		Tapeats	
CRETACEOUS		Glen Canyon Gr.		Akah		Ophir	
Montana		Navajo	58-70	Barker Creek		Tintic	
Mesaverde		Kayenta	6155			PRE - CAMBRIAN	
Price River		Wingate	6256	Cane Creek			
Blackhawk		TRIASSIC					

STATE OF UTAH

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1 a. TYPE OF WORK: DRILL [X] DEEPEN [ ]

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [ ] [X] OTHER - COALBED METHANE SINGLE ZONE [ ] MULTIPLE ZONE [ ]

5. LEASE DESIGNATION AND SERIAL NO.: ML 45805

6. IF INDIAN, ALLOTTEES OR TRIBE NAME:

2. NAME OF OPERATOR: ANADARKO PETROLEUM CORPORATION

7. UNIT AGREEMENT NAME:

3. ADDRESS AND TELEPHONE NO.: 17001 Northchase Drive, Houston, Texas 77060 281/875-1101

8. FARM OR LEASE NAME WELL NO.: Helper State SWD 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
At surface: 1131 FSL & 2194 FWL, SW Section 3, T14S R10E

9. API WELL NO.:

At proposed prod. zone: 1131 FSL & 2194 FWL, SW Section 3, T14S R10E

10. FIELD AND POOL OR WILDCAT: Helper CBM

11. SEC. T,R,M, OR BLK. AND SURVEY OR AREA: Section 3, T14S R10E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE.: 2 miles N of Price, Ut

12. COUNTY: Carbon

13. STATE: Utah

15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 1131'

16. NO. OF ACRES IN LEASE: 2441'

17. NO. OF ACRES ASSIGNED TO THIS WELL.: 160

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE. FT.: 700'

19. PROPOSED DEPTH: 6550'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5965' GR

22. APPROX. DATE WORK WILL START.: 1/28/97

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4"	8 5/8"	24	300'	200 cu. ft.
7 7/8"	5 1/2"	17	6550'	300 cu. ft.

See Revised APD for actual Casing and Cementing program.

Attached is the following:

1. Survey Plat
2. Drilling Plan with BOP Schematic.
3. Surface Use Plan.
4. Topo & Access Map & Area Map.
5. Pit & Pad Layout with cross sections of pit, pad, & rig layout.
6. Self-Certification of Operator.
7. Sundry Notice - Location Exception

The Cultural Resource Study will be submitted under separate cover.

IN ABOVE SPACE, DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED [signature] TITLE Dave Hudspeth Staff Drilling Engineer DATE 5/11/97

(This space for Federal or State office use.)

PERMIT NO. 43-007-30361 APPROVAL DATE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations theron.
CONDITIONS OF APPROVAL IF ANY:

APPROVED BY TITLE DATE

See Instructions On Reverse Side

DRILLING PLAN
TO ACCOMPANY APPLICATION FOR PERMIT TO DRILL

Company: Anadarko Petroleum Corporation

Well: Helper State SWD 1

Location: 1131' FSL & 2194' FWL
SW Sec 3-T14S-R10E

Lease: ML 45805

Surface Elevation: 5965'

A. Estimated Tops of Important Geologic Markers:

GEOLOGIC MARKER	DEPTH
Mancos / Emery	Surface
Bluegate Shale	1120'
Ferron Sandstone	2120'
Ferron Coal Top	2132'
Base of Ferron Coal	2282'
Tununk Shale	2332'
Dakota	2600'
Curtis	4400'
Carmel	5000'
Navajo	5600'
Wingate	6100'

B. Estimated Depth at which Water, Oil, Gas or other Mineral-Bearing zones are expected to be encountered:

Gas-bearing Ferron Coal is expected to be encountered from 2132'-2282'.

All fresh water zones and prospectively valuable mineral zones encountered during drilling will be recorded by depth and adequately protected. All oil and gas shows will be tested to determine commercial potential.

C. Pressure Control Equipment:

A 9" 3000 psi WP double gate hydraulic BOP with pipe rams and blind rams will be installed on the 8-5/8" casinghead. The BOP stack will be tested prior to drilling below surface casing. The ram preventers will be tested to 70% of the working pressure of the casinghead. The annular will be tested to 50% of its working pressure. Operational checks will be made daily or on trips. A BOP schematic is shown on attached Exhibit "A".

The BOP system will be consistent with API RP 53. Pressure tests will be conducted before drilling out from under all casing strings which are set and cemented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order. This inspection will be recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plugs. The accumulator system will meet IADC guidelines concerning pump capacities, storage capacity, and reservoir volume. Closing unit fluid volume will be sufficient to pre-charge the system to operating pressure plus 50% excess. One set of controls will be in the doghouse on the rig floor and one set will be remote on the drilling pad.

D. Casing Program

Surface Casing - 8-5/8" casing will be set at approximately 300'.

Production Casing - 5-1/2" casing will be set at approximately 6550' if well is to be completed.

	SIZE	WT./FT.	GRD.	THRD.	CONDITION
Surface	8-5/8"	24.0	K-55	8rd	New
Production	5-1/2"	17.0	K-55	8rd	New

Casing Design Factors

The safety factors on casing strings will equal or exceed the following values:

Collapse	1.0
Joint Strength	1.6
Burst	1.33

Cement Program

Surface - Cement will be circulated to the surface. Casing will be cemented with approximately 200 cu. ft. of API Class 'G' cement.

Production - Casing will be cemented with approximately 300 cu. ft. of API Class 'G" cement. The actual cement volume will be based upon hole depth and gauge, and will be determined from logs.

Additional additives will be used to retard the cement, accelerate the cement, control lost circulation, or control fluid loss. All cementing will be done in accordance with API cementing practices.

E. Mud Program and Circulating Medium:

Fresh water circulated through the reserve pit will be used for drilling the 12-1/4" surface hole to 300'. An air or air/mist system will be used for drilling from below surface pipe at 300' to TD.

The mud system will be visually monitored.

A truck-mounted air drilling rig may be used to drill the surface hole to 300' and to pre-set the surface casing before moving a drilling rig on location to drill the rest of the hole to TD.

Sufficient mud materials will be stored at the wellsite to maintain mud requirements and to control minor well control or lost circulation problems.

F. Coring, Logging, and Testing Program:

a. Rotary sidewall coring in the Ferron Sandstone interval (2132'-2282') may be performed, depending upon shows and hole conditions.

b. DST's may be run depending upon shows.

c. The following logging program is planned:

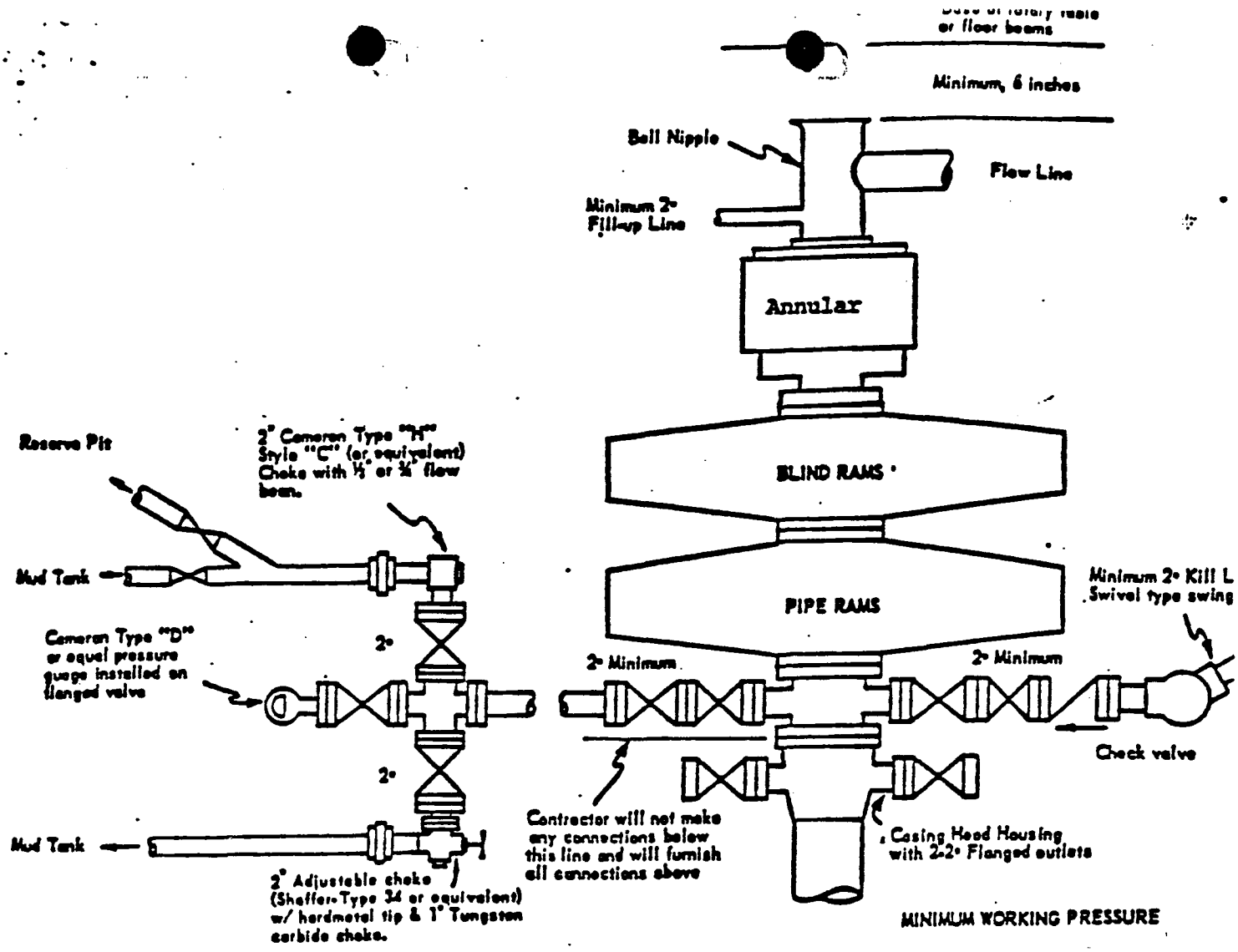
1. DIL-ML-SP-GR-CAL over prospective intervals.
2. SDL-CNL-GR-CAL over prospective intervals.

d. A mud logging unit with chromatograph will be used from approximately 300' to TD.

e. Productive zones will be swab tested. Water produced during testing will be contained in the temporary reserve pit. All produced oil will be stored and sold. Gas will be flared during testing.

G. Abnormal Conditions and Potential Hazards:

Abnormal conditions such as abnormal temperatures or pressures are not anticipated. Potential hazards such as H_2S are also not anticipated.



MINIMUM WORKING PRESSURE

Anadarko Petroleum Corporation

MINIMUM BLOWOUT PREVENTER REQUIREMENTS - NORMAL PRESSURE SERVICE

SURFACE USE PLAN
TO ACCOMPANY APPLICATION FOR PERMIT TO DRILL

Anadarko Petroleum Corporation
Helper State SWD 1
1131' FSL & 2194' FWL, SW Sec 3-T14S-R10E
Carbon Co., Utah

1. Existing Roads: See Map A and Map B.

   a. Location of proposed well in relation to town or other reference point: Location is approximately 2.0 miles north of Price, Utah.

   b. Proposed route to location: (See Map "A" for marked access).

   c. Location and description of roads in the area:
   (See Map "A" and Map "B").

   d. Plans for improvement and/or maintenance of existing roads: The existing roads will be maintained in the same or better condition as existed prior to the commencement of operations.

2. Planned Access Roads:

   a. The existing and proposed roads will be crowned, ditched or dipped from the existing County road to the location prior to use for moving the drilling rig onto the site. The maximum disturbed width will not exceed 30' with an eighteen foot running surface. Dust will be controlled by the use of water or an approved dust retardant. All roads, including access to drilling water, will be maintained in as good or better condition than existing condition.

   b. Maximum grades: Maximum grade will be less than 10%.

   c. Turnouts: None planned.

   d. Location: Access to the location uses an existing road up to the location. New road that will be constructed for access off of the existing road is flagged. (See Map B).

   e. Drainage: The road surface will be center crowned with ditches on each side of road. Slopes will have a maximum slope of 3:1.

   f. There will be no culverts placed in the ditchways during the drilling phase of operations. Further evaluation will be made for the additions of culverts if the road is to have long-term use.

   g. Surface materials (source): Surface materials will most likely not be required to be transported to the access road or drillpad for construction purposes. However, if gravel is required, the dirt contractor will be responsible for locating and permitting of any necessary construction material.

3. Location of Existing Wells: (2 mile radius)

The proposed Helper State SWD 1 location is approximately 500' south of the proposed Helper State A-5.

4. Location of Tank Batteries and Production Facilities:

All permanent (on site for six months or longer) structures constructed or installed (including oil well pumpjacks) will be painted a flat, non-reflective, earthtone color to match the standard environmental colors, as determined by the Rocky Mountain 5-State Interagency Committee. This will include all facilities except those required to comply with O.S.H.A. (Occupational Safety and Health Act) regulations. These will be painted the color stipulated by O.S.H.A. All facilities will be painted within six months of installation.

Gas meter runs for each well, if needed, will be located within 500 feet of the wellhead. The gas flowline will be buried from the wellhead to the meter and 500 feet downstream of the meter run or any production facilities. Meter runs will be housed and/or fenced.

The oil and gas measurement facilities will be installed on the well location. The oil and gas meters will be calibrated in place prior to any deliveries. Test for meter accuracy will be conducted monthly for the first three months on new meter installations and at least quarterly thereafter. The State of Utah will be provided with a date and time for the initial meter calibration and all future meter proving schedules. A copy of the meter calibration reports will be submitted to State of Utah. All meter measurement facilities will conform with the API standards for liquid hydrocarbons and the AGA standard for natural gas measurement.

5. Location and Type of Water Supply:

Water supply for drilling and completion purposes will be furnished by a water hauler.

Water supply will be obtained from either the Price River or from Willow Creek.

6. Source of Construction Material:

Native material will be used for road surfacing and pad construction.

Should additional construction material be required, it will be the responsibility of the dirt contractor to locate and permit (if necessary) use of that material.

7. Methods of Handling Waste Disposal

The reserve pit will be lined.

Produced waste water will be confined to a lined pit for a period not to exceed 90-days after initial production.

Trash will be confined in a covered container and hauled to an approved landfill. Burning of waste or oil is not approved, and spoil material will be kept on site for recontouring.

No bore holes will be used for disposal of waste materials. Human waste will be contained and will be disposed of at an approved sanitary landfill.

8. Ancillary Facilities:

Not applicable for drilling operations in this area.

9. Wellsite Layout:

A plat showing access to the well-pad and the location of the reserve pit are attached.

The location and access road will be cleared of trees prior to any construction. Stumps will be scattered or buried in an area designated by the State of Utah. Any stump left in place will be cut so that the stump height does not exceed 12 inches. All slash less than four inches in diameter will be chipped or scattered outside the cleared area and must be within 24 inches of the ground at all points. All material four inches in diameter or greater will be removed. All of the above will take place prior to placement of drilling facilities.

Topsoil and vegetation will be stripped together to a depth of 6 to 8 inches and stockpiled by wind-row on the northeast edge of the location. No topsoil stripping will be allowed when soils are moisture saturated to a depth of 3 inches, or frozen below the stripping depth.

The reserve pit will be fenced on three sides prior to drilling activity and closed off on the fourth side after drilling is finished. Fencing will be four strands of barbed wire or 48-inch woven wire with one strand of barbed wire above the woven wire. All corners will be braced with a wooden H-type brace. The fence construction will be on cut or undisturbed ground and the fence will be maintained in a livestock tight condition.

10. Plans for Restoration of Surface:

The State of Utah will be notified at least 24-hours prior to commencing reclamation work.

Immediately upon completion of drilling, the location and surrounding area will be cleared of all debris, materials, trash, and junk not required for production.

Before any dirt work to restore the location takes place, the reserve pit must be completely dry and all cans, barrels, pipe, etc. will be removed.

If the well is a producer:

Unneeded areas of the location will be reclaimed as soon as the reserve pit has dried. Upgrade and maintain the access roads as necessary to prevent soil erosion and accommodate year-round traffic. Reshape areas unnecessary to operations, rip or disk on the contour, and seed all disturbed area outside the work area according to the seed mixture specified below. Save the topsoil for use during final reclamation unless the site can be recontoured to blend with the natural topography as required for final abandonment. Perennial vegetation must be established. Additional work will be required in case of seeding failures. All permanent facilities placed on the location will be painted to blend with the natural environment.

If the well is abandoned/dry hole:

Restore the access road and location to blend with the natural topography. During reclamation of the site, push the fill material into cuts and up over the backslope. Leave no depressions that will trap water or form ponds. Distribute topsoil evenly over the location and seed according to the above seed mixture. The access road and location will be ripped or disked prior to seeding.

Prepare seed-bed by contour cultivating four to six inches deep. Drill seed 1/2 to 1 inch deep following the contour. In areas that cannot be drilled, broadcast seed at 1.5 times the application rate and cover 1/2 to 1 inch deep with a harrow or drag-bar.

Fall seeding will be completed after September 1 and prior to ground frost. Spring seeding will be completed after the frost has left the ground and prior to June 1.

11. Other Information:

There will be no deviation from the proposed drilling and/or workover program without prior approval. Safe drilling and operating practices must be observed.

"Sundry Notice and Report on Wells" will be filed for approval for all changes of plans and other operations.

The dirt contractor will be provided with an approved copy of the surface use plan.

An archaeology inspection will be performed by an authorized contractor. Their report on this inspection will be sent directly to the State of Utah.

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sties, or for collecting artifacts or fossils. The Operator will immediately bring to the attention of the State of Utah any and all antiquities or other objects of historic or scientific interest including, but not limited to, historic or prehistoric ruins, artifacts, or fossils discovered as a result of operations under this permit. The operator will immediately suspend all activities in the area of the object and will leave such discoveries intact until told to proceed by the State of Utah. Notice to proceed will be based upon evaluation of the cultural significance of the object. Evaluation will be by a qualified professional. When not practical, the Operator will follow the mitigation requirements set forth by the State of Utah concerning protection, preservation, or disposition of any sites or material discovered. Within five working days the State of Utah will inform the Operator as to:

Whether materials appear eligible for the National Register of Historic Places;

the mitigation measure(s) the Operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,

a time frame for the State of Utah to complete an expedited review to conform, through the State Historic Preservation Officer, that the findings are correct and that mitigation is appropriate.

If the Operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the State of Utah will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, in those situations where the State of Utah determines that mitigation, data recovery and/or salvage excavations are necessary, the Operator will bear the cost. The State of Utah will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the State of Utah that the required mitigation has been completed, the Operator will then be allowed to resume construction.

12. Lessee's or Operator's Representatives and Certification:

REPRESENTATIVE

Name: Dave Hudspeth
Phone: 281/874-8814
Address: Anadarko Petroleum Corporation
17001 Northchase Drive
Houston, Texas 77060

CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which currently exist, that the statements made in this plan are to the best of my knowledge, true and correct, and that the work associated with the operations proposed herein will be performed by

ANADARKO PETROLEUM CORPORATION

and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

16-May-97
Date

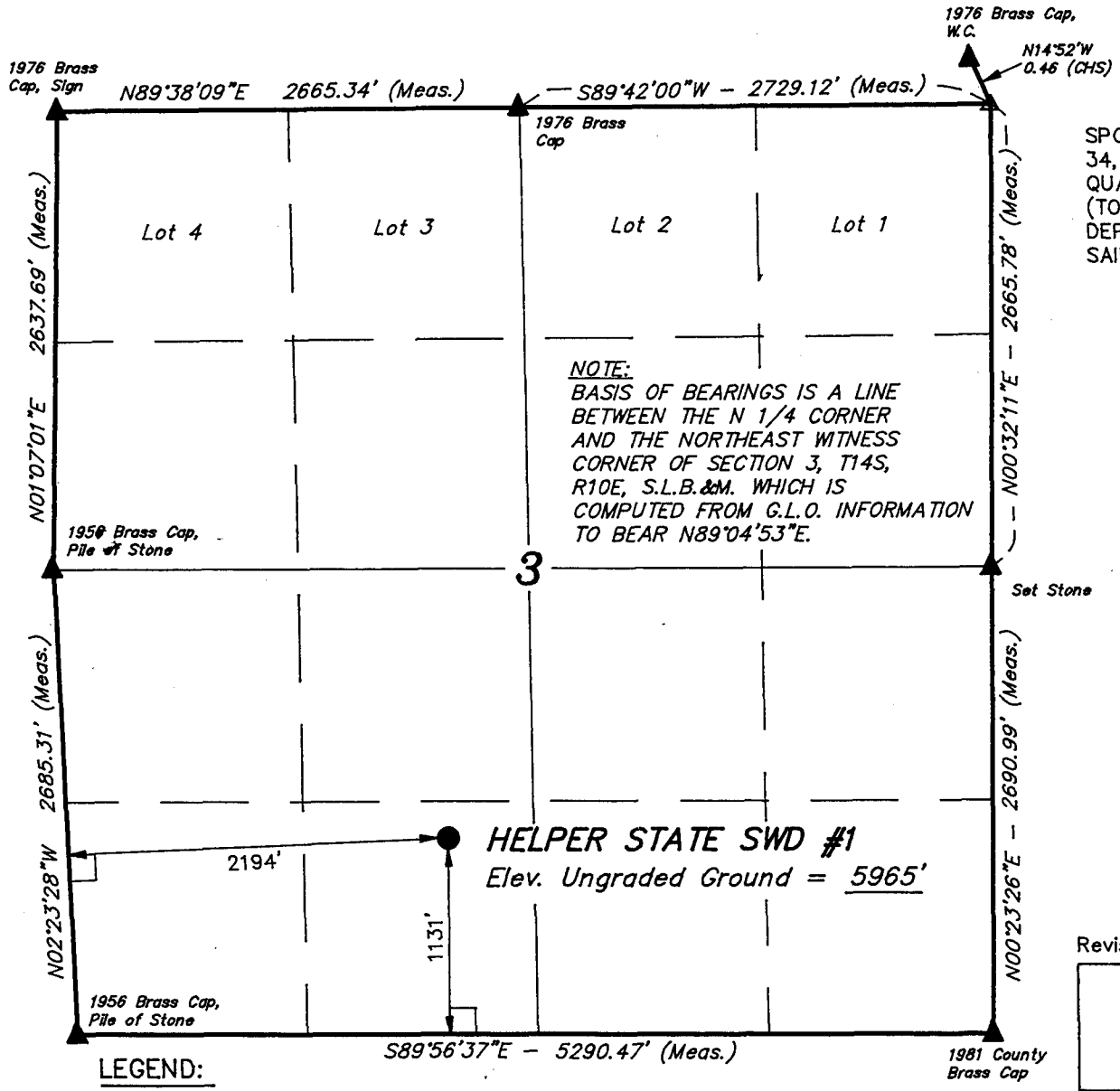
Dave Hudspeth
Staff Drilling Engineer

s:\houdiv\wells\helpstswd1\utsurfup.doc

ANADARKO PETROLEUM CORP.

Well location, HELPER STATE SWD #1, located as shown in the SE 1/4 SW 1/4 of Section 3, T14S, R10E, S.L.B.&M. Carbon County, Utah

T14S, R10E, S.L.B.&M.

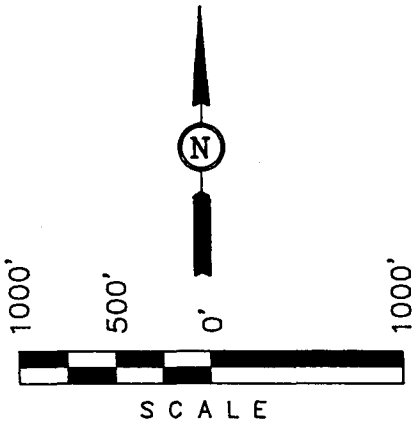


LEGEND:

- └ = 90° SYMBOL
- ● = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.
- △ = TRUE POSITION OF CORNER.

BASIS OF ELEVATION

SPOT ELEVATION NEAR THE SOUTHEAST CORNER OF SECTION 34, T13S, R10E, S.L.B.&M. TAKEN FROM THE HELPER QUADRANGLE, UTAH, CARBON COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 6350 FEET.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

No. 161319
REGISTERED LAND SURVEYOR
REGISTRATION NO. 161319
STATE OF UTAH

STATE OF UTAH

Revised: 10-16-96 C.B.T.

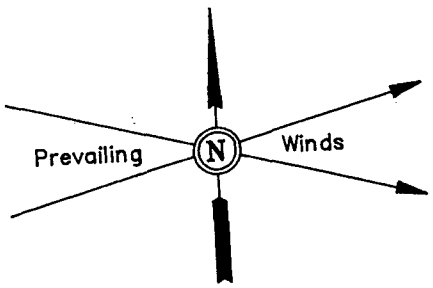
UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(801) 789-1017

SCALE	DATE SURVEYED:	DATE DRAWN:
1" = 1000'	9-18-96	9-23-96
PARTY: D.K. B.G. C.B.T.	REFERENCES: G.L.O. PLAT	
WEATHER: COOL	FILE: ANADARKO PETROLEUM CORP.	

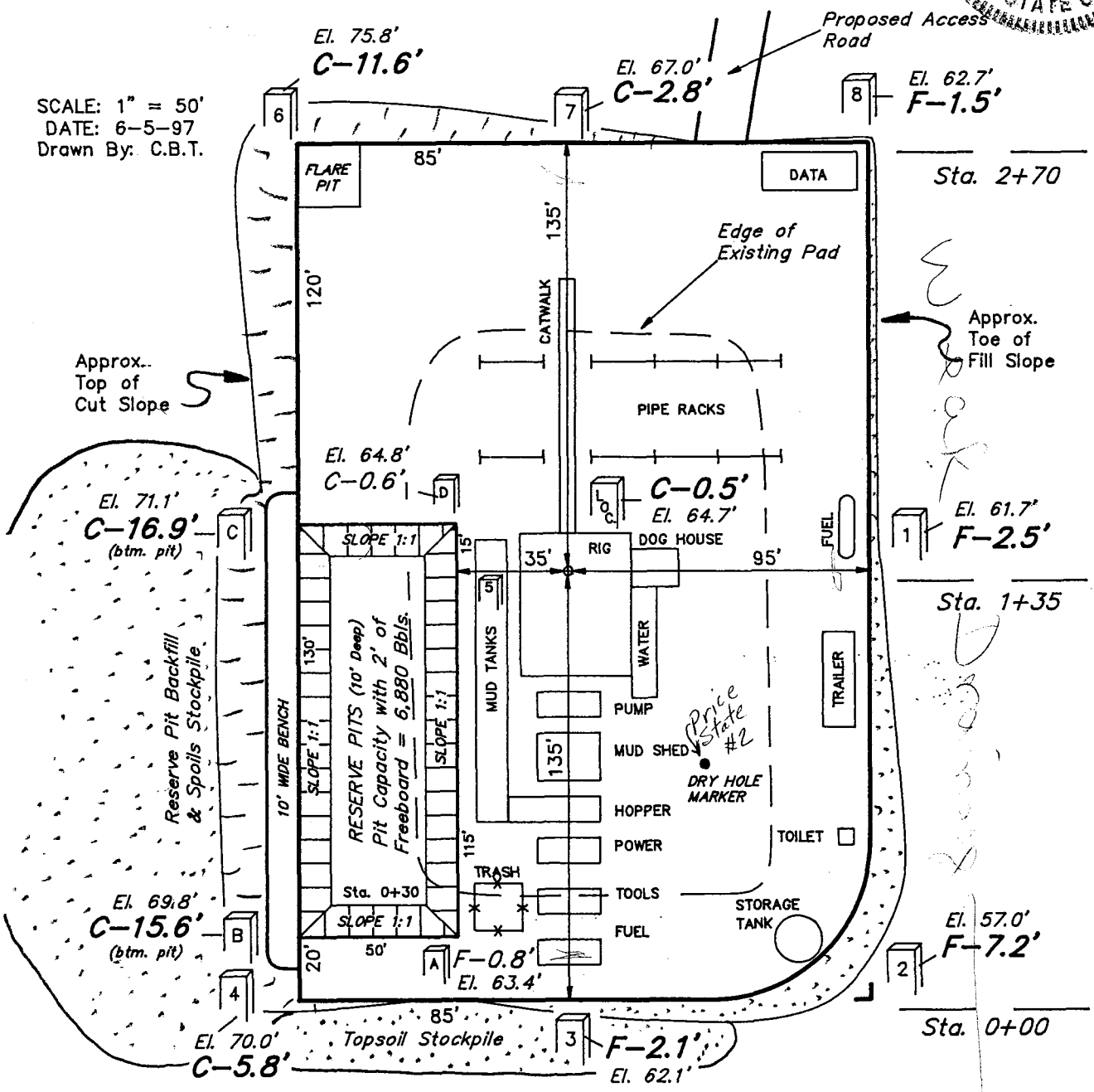
ANADARKO PETROLEUM CORP.

LOCATION LAYOUT FOR

HELPER STATE SWD #1
SECTION 3, T14S, R10E, S.L.B.&M.
1131' FSL 2194' FWL



SCALE: 1" = 50'
DATE: 6-5-97
Drawn By: C.B.T.



ELEV. UNGRADED GROUND AT LOC. STAKE = **5964.7'**
ELEV. GRADED GROUND AT LOC. STAKE = **5964.2'**

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East Vernal, Utah

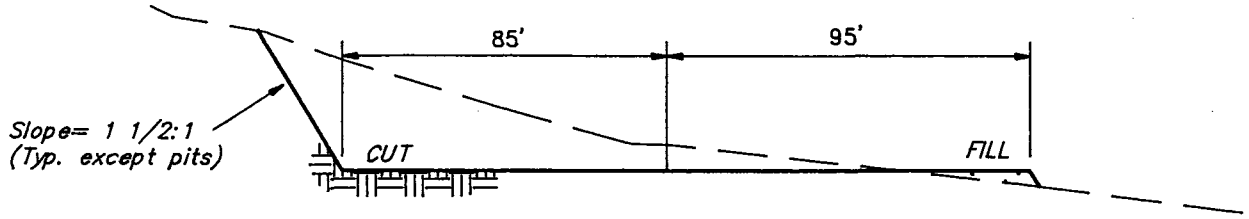
ANADARKO PETROLEUM CORP.

TYPICAL CROSS SECTIONS FOR

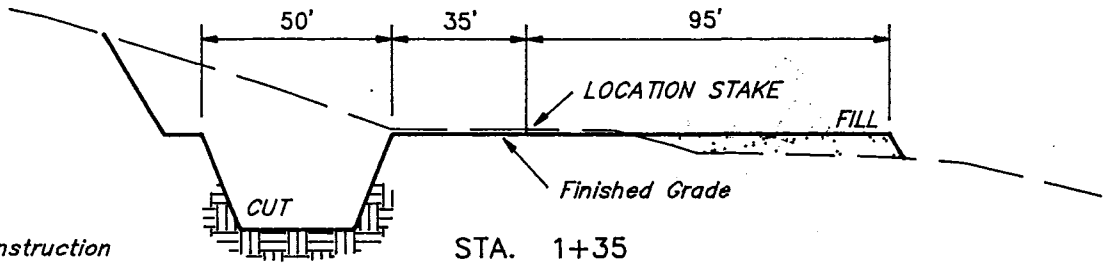
HELPER STATE SWD #1
SECTION 3, T14S, R10E, S.L.B.&M.
1131' FSL 2194' FWL

1" = 20'
X-Section Scale
1" = 50'

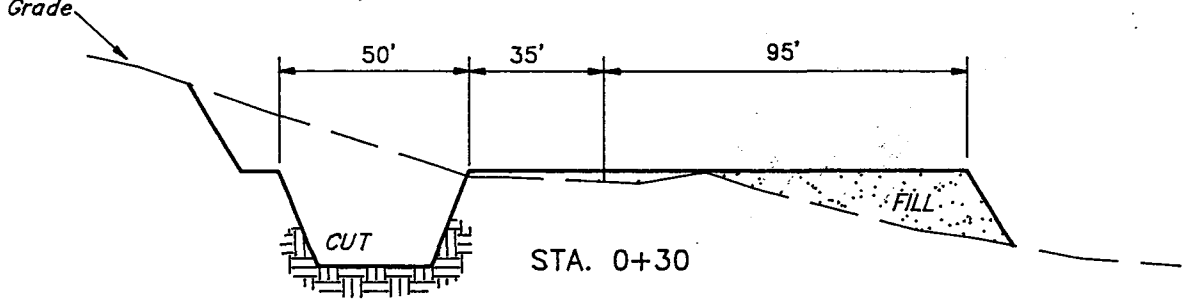
DATE: 6-5-97
Drawn By: C.B.T.



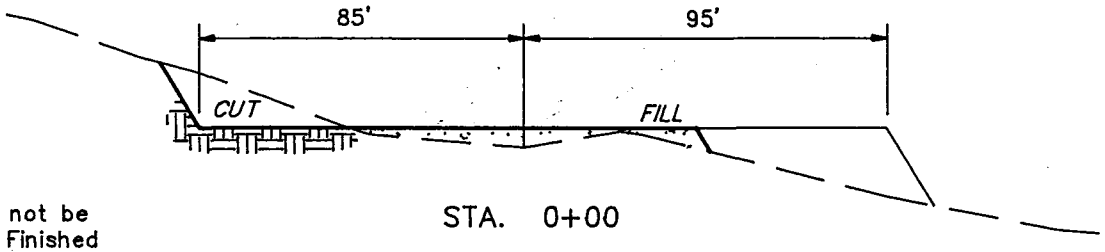
STA. 2+70



STA. 1+35



STA. 0+30



STA. 0+00

NOTE:
Topsoil should not be Stipped Below Finished Grade on Substructure Area.

APPROXIMATE YARDAGES

CUT

(6") Topsoil Stripping = 900 Cu. Yds.

Remaining Location = 4,950 Cu. Yds.

TOTAL CUT = 5,850 CU.YDS.

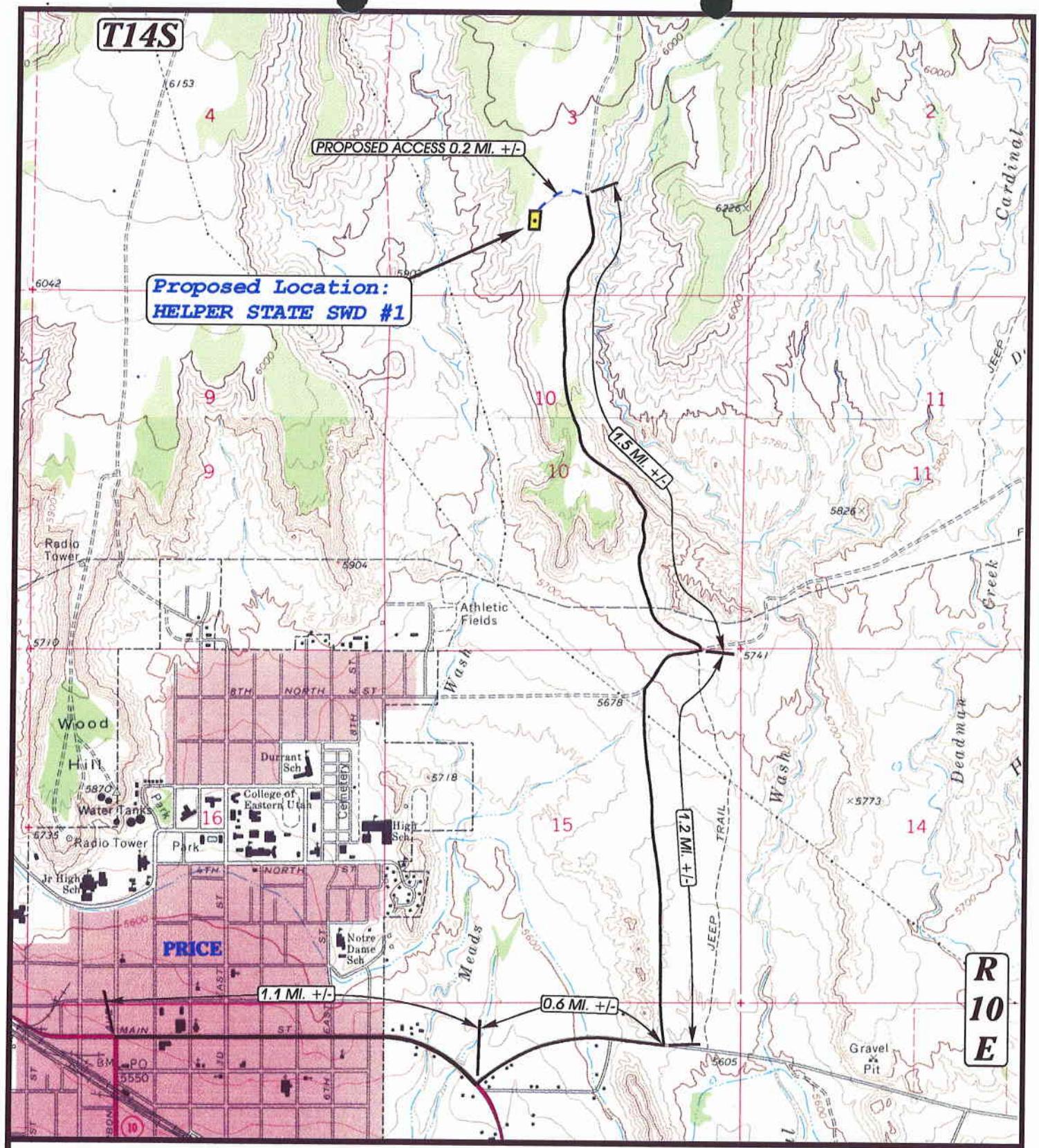
FILL = 2,170 CU.YDS.

EXCESS MATERIAL AFTER 5% COMPACTION = 3,570 Cu. Yds.

Topsoil & Pit Backfill (1/2 Pit Vol.) = 1,790 Cu. Yds.

EXCESS UNBALANCE (After Rehabilitation) = 1,780 Cu. Yds.

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East Vernal, Utah



TOPOGRAPHIC MAP

DATE: 9-24-96
Drawn by: D.COX

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (801) 789-1017

SCALE: 1" = 2000'

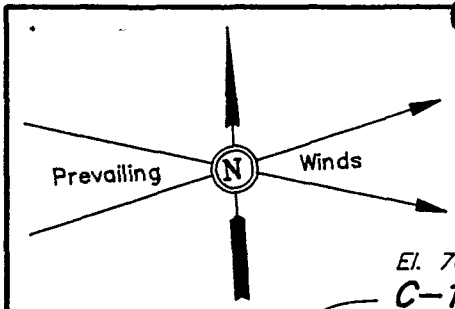
ANADARKO PETROLEUM CORP.

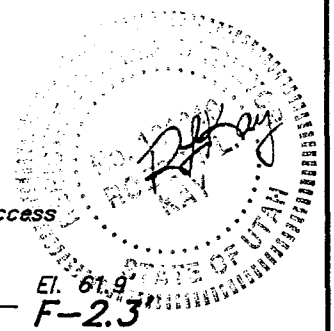
HELPER STATE SWD #1
SECTION 3, T14S, R10E, S.L.B.&M.
1131' FSL 2194' FWL

ANADARKO PETROLEUM CORP.

LOCATION LAYOUT FOR

HELPER STATE SWD #1
SECTION 3, T14S, R10E, S.L.B.&M.
1131' FSL 2194' FWL





Revised: 10-16-96 C.B.T.
SCALE: 1" = 50'
DATE: 9-23-96
Drawn By: C.B.T.

El. 76.8'
C-12.6'

El. 67.4'
C-3.2'

Proposed Access Road

El. 61.9'
F-2.3'

Sta. 3+40

FLARE PIT

85'

DATA

120'

145'

Edge of Existing Pad

CATWALK

Approx. Top of Cut Slope

Approx. Toe of Fill Slope

PIPE RACKS

El. 64.8'
C-0.6'

C-0.5'
El. 64.7'

El. 71.1'
C-16.9'
(btm. pit)

SLOPE 1:1

15'

35'

RIG

DOG HOUSE

95'

FUEL

El. 61.1'
F-3.1'

Sta. 1+80

MUD TANKS

WATER

TRAILER

Reserve Pit Backfill & Spoils Stockpile

RESERVE PITS (10' Deep)
Pit Capacity with 2' of Freeboard = 6,880 Bbls.

130'

SLOPE 1:1

PUMP

MUD SHED

DRY HOLE MARKER

HOPPER

TOILET

POWER

115'

Sta. 0+75

TOOLS

FUEL

El. 69.8'
C-15.6'
(btm. pit)

50'

F-0.8'
El. 63.4'

65'

150'

TRASH

STORAGE TANK

El. 54.2'
F-10.0'

Sta. 0+00

85'

El. 70.3'
C-6.1'

Topsoil Stockpile

F-2.9'
El. 61.3'

ELEV. UNGRADED GROUND AT LOC. STAKE = 5964.7'
ELEV. GRADED GROUND AT LOC. STAKE = 5964.2'

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East Vernal, Utah

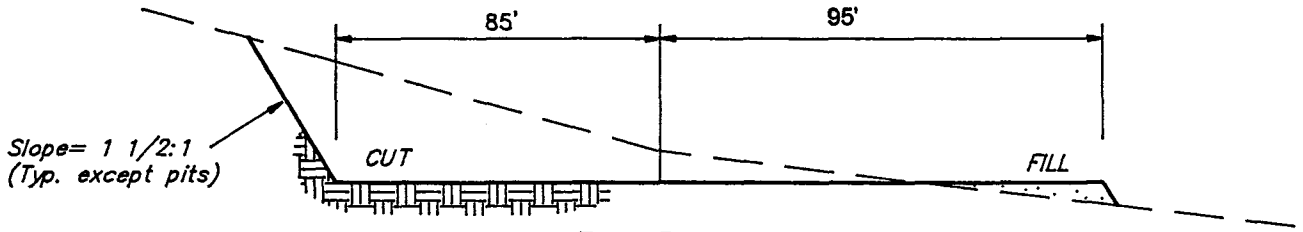
ANADARKO PETROLEUM CORP.

TYPICAL CROSS SECTIONS FOR

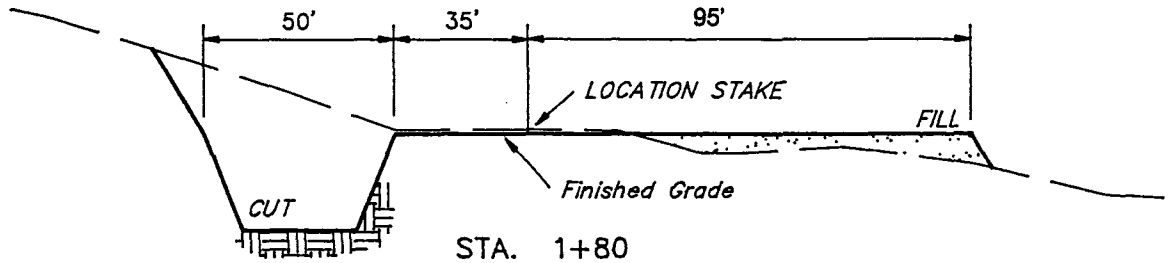
HELPER STATE SWD #1
SECTION 3, T14S, R10E, S.L.B.&M.
1131' FSL 2194' FWL

1" = 20'
X-Section
Scale
1" = 50'

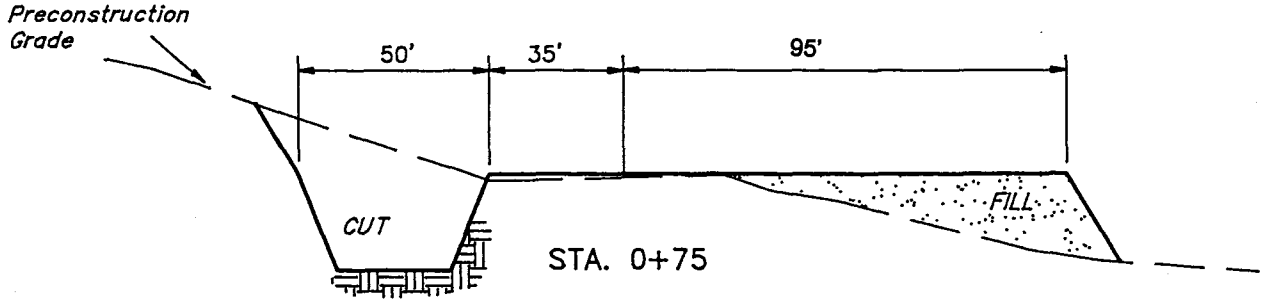
DATE: 9-23-96
Drawn By: C.B.T.
Revised: 10-16-96 C.B.T.



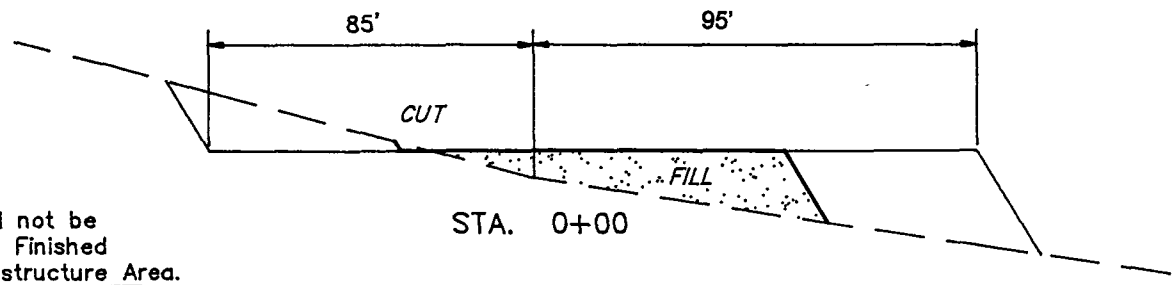
STA. 3+40



STA. 1+80



STA. 0+75



STA. 0+00

NOTE:
Topsoil should not be Stipped Below Finished Grade on Substructure Area.

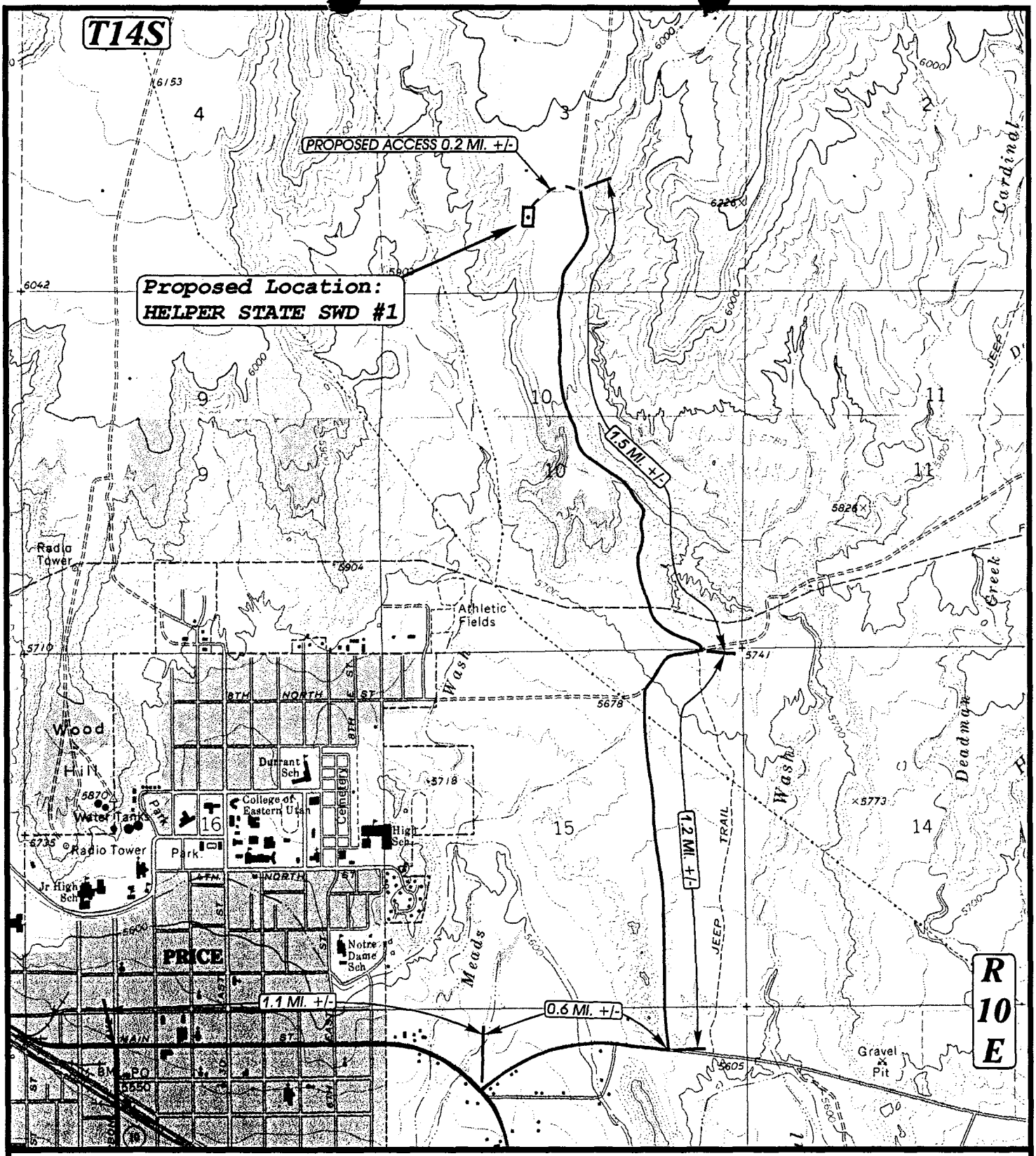
APPROXIMATE YARDAGES

CUT

(6") Topsoil Stripping	=	*1,300* Cu. Yds.
Remaining Location	=	*5,560* Cu. Yds.
TOTAL CUT	=	*6,860* CU.YDS.
FILL	=	*4,440* CU.YDS.

EXCESS MATERIAL AFTER 5% COMPACTION	=	*2,190* Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol.)	=	*2,190* Cu. Yds.
EXCESS UNBALANCE (After Rehabilitation)	=	*0* Cu. Yds.

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East Vernal, Utah



TOPOGRAPHIC MAP

DATE: 9-24-96
Drawn by: D.COX

UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (801) 789-1017

SCALE: 1" = 2000'

ANADARKO PETROLEUM CORP.

HELPER STATE SWD #1
SECTION 3, T14S, R10E, S.L.B.&M.
1131' FSL 2194' FWL

FORM 9

STATE OF UTAH

DIVISION OF OIL, GAS AND MINING

5. Lease Designation and Serial Number: ML 45805

SUNDRY NOTICES AND REPORTS ON WELLS

6. If Indian, Allottee or Tribe Name:

Do not use this form for proposals to drill new wells, deepen existing wells, or to reenter plugged and abandoned wells. Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form for such proposals.

7. Unit Agreement Name:

1. Type of Well: OIL ☐ GAS ☐ OTHER: Coalbed Methane

8. Well Name and Number: Helper State SWD 1

2. Name of Operator: Anadarko Petroleum Corporation

9. API Well Number:

3. Address and Telephone Number: 17001 Northchase Drive, Houston, TX 77060 281-874-8814

10. Field and Pool, or Wildcat: Helper CBM

4. Location of Well

Footages: 1131' FSL & 2194' FWL

County: Carbon

QQ, Sec., T., R., M.: SW Sec 3-T14S-R10E

State: Utah

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT (Submit in Duplicate)		SUBSEQUENT REPORT (Submit Original Form Only)	
☐ Abandonment	☐ New Construction	☐ Abandonment *	☐ New Construction
☐ Casing Repair	☐ Pull or Alter Casing	☐ Casing Repair	☐ Pull or Alter Casing
☐ Change of Plans	☐ Recompletion	☐ Change of Plans	☐ Shoot or Acidize
☐ Conversion to Injection	☐ Shoot or Acidize	☐ Conversion to Injection	☐ Vent or Flare
☐ Fracture Treat	☐ Vent or Flare	☐ Fracture Treat	☐ Water Shut-Off
☐ Multiple Completion	☐ Water Shut-Off	☐ Other	
☒ Other Location Exception			
Approximate date work will start May, 1997		Date of work completion	

Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form.

* Must be accompanied by a cement verification report.

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The subject well is proposed as stated above due to more favorable "Topographic & Geologic" considerations as shown by our offset wells. We feel this will increase the chances of drilling and completing a successful well in conjunction of reducing any surface damages.

As per Rule No. R649-3-3-1.1 - 1.3, the surrounding acreage is obtained wholly by APC, thus consent from all surrounding owners does not apply to the subject well.

13. Name & Signature: Dave Hudspeth Title: Staff Drilling Engineer Date: 11.May.97

(This space for State use only)

(1\93) (See Instructions on Reverse Side)

FORM 3

Revised

STATE OF UTAH
DIVISION OF OIL , GAS AND MINING

RECEIVED
AUG 22 1997
DIV. OF OIL, GAS & MINING

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1 a. TYPE OF WORK: DRILL [X] DEEPEN [ ]

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [ ] [X] OTHER - COALBED METHANE SINGLE ZONE [ ] MULTIPLE ZONE [ ]

5. LEASE DESIGNATION AND SERIAL NO.: ML 45805

6. IF INDIAN, ALLOTTEES OR TRIBE NAME:

2. NAME OF OPERATOR: ANADARKO PETROLEUM CORPORATION

7. UNIT AGREEMENT NAME:

3. ADDRESS AND TELEPHONE NO.: 17001 Northchase Drive, Houston, Texas 77060 281/875-1101

8. FARM OR LEASE NAME WELL NO.: Helper State SWD 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
At surface: 1131 FSL & 2194 FWL, SW Section 3, T14S R10E
At proposed prod. zone: 1131 FSL & 2194 FWL, SW Section 3, T14S R10E

9. API WELL NO.:

10. FIELD AND POOL OR WILDCAT: Helper CBM

11. SEC. T,R,M, OR BLK. AND SURVEY OR AREA: Section 3, T14S R10E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE.: 2 miles N of Price, Ut

12. COUNTY: Carbon

13. STATE: Utah

15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 1131'

16. NO. OF ACRES IN LEASE: 2441'

17. NO. OF ACRES ASSIGNED TO THIS WELL.: 160

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE. FT.: 700'

19. PROPOSED DEPTH: 6550'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5965' GL

22. APPROX. DATE WORK WILL START.: 1/28/97

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
16"	13 3/8"	48	200'	200 cu. ft.
12 1/4"	8 5/8"	24	2500'	800 cu. ft.
7 7/8"	5 1/2"	17	6550'	300 cu. ft.

Attached is the following:

1. Survey Plat
2. Drilling Plan with BOP Schematic.
3. Surface Use Plan.
4. Topo & Access Map & Area Map.
5. Pit & Pad Layout with cross sections of pit, pad, & rig layout.
6. Self-Certification of Operator.
7. Sundry Notice - Location Exception.

The Cultural Resource Study will be submitted under separate cover.

IN ABOVE SPACE, DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED /s/ Dave Hudspeth TITLE Dave Hudspeth, Staff Drilling Engineer DATE 8/18/97

(This space for Federal or State office use.)

PERMIT NO. 43-007-30361 APPROVAL DATE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations theron.
CONDITIONS OF APPROVAL IF ANY:

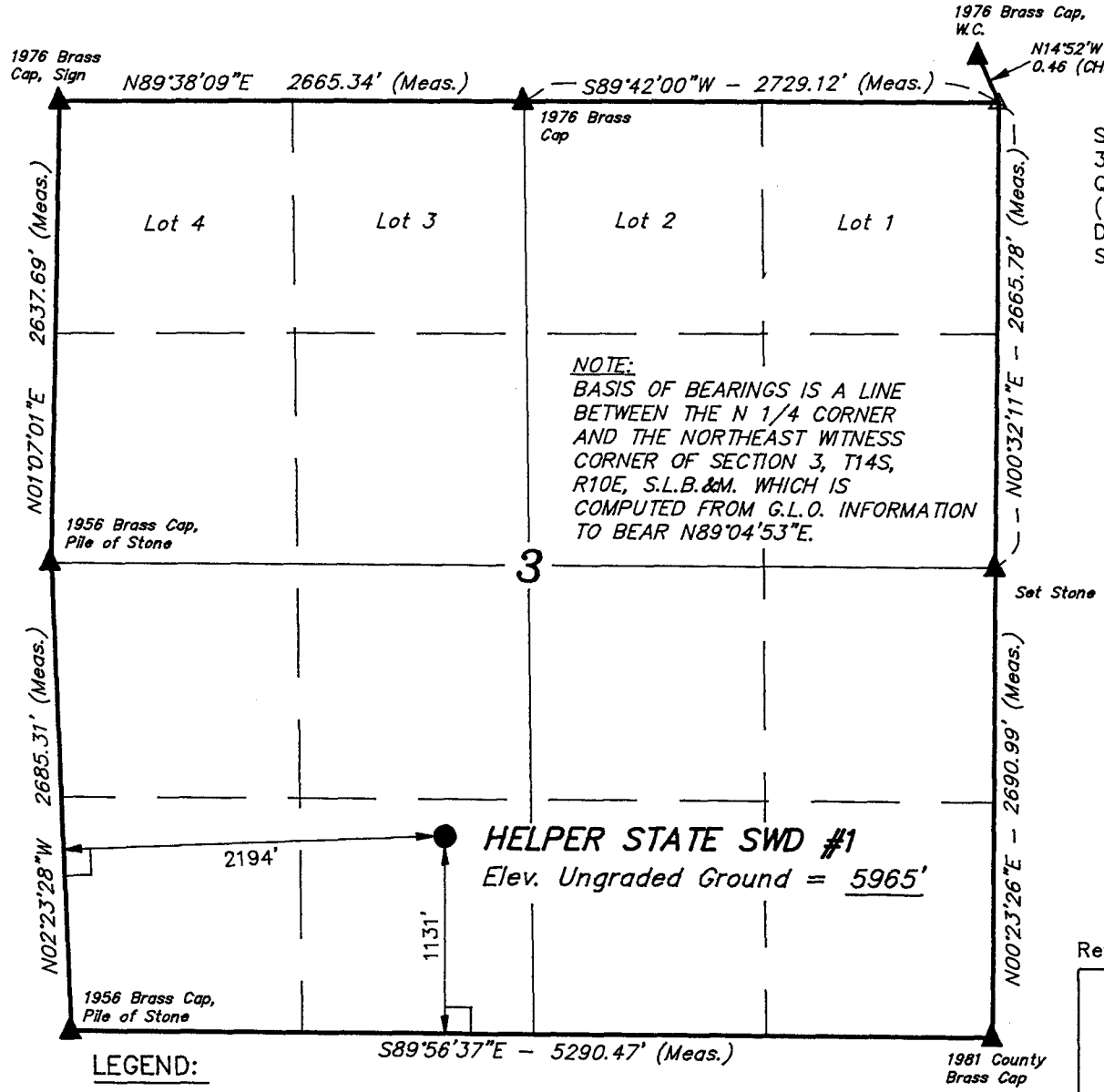
APPROVED BY John R. Baza TITLE Associate Director DATE 8/25/97

See Instructions On Reverse Side

ANADARKO PETROLEUM CORP.

Well location, HELPER STATE SWD #1, located as shown in the SE 1/4 SW 1/4 of Section 3, T14S, R10E, S.L.B.&M. Carbon County, Utah

T14S, R10E, S.L.B.&M.

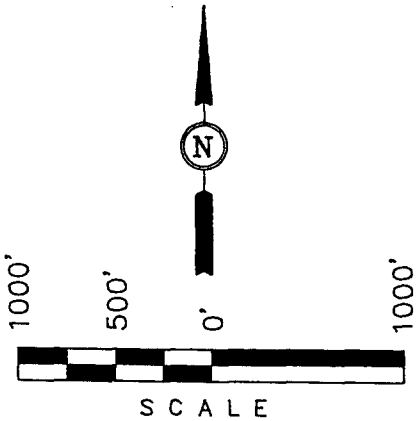


LEGEND:

- └ = 90° SYMBOL
- ● = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.
- △ = TRUE POSITION OF CORNER.

BASIS OF ELEVATION

SPOT ELEVATION NEAR THE SOUTHEAST CORNER OF SECTION 34, T13S, R10E, S.L.B.&M. TAKEN FROM THE HELPER QUADRANGLE, UTAH, CARBON COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 6350 FEET.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Robert L. Kay

REGISTERED LAND SURVEYOR
REGISTRATION NO. 161319
STATE OF UTAH

Revised: 10-16-96 C.B.T.

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(801) 789-1017

SCALE: 1" = 1000'	DATE SURVEYED: 9-18-96	DATE DRAWN: 9-23-96
PARTY: D.K. B.G. C.B.T.	REFERENCES: G.L.O. PLAT	
WEATHER: COOL	FILE: ANADARKO PETROLEUM CORP.	

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 05/27/97

API NO. ASSIGNED: 43-007-30361

WELL NAME: HELPER STATE SWD 1
OPERATOR: ANADARKO PETROLEUM (N0035)

PROPOSED LOCATION:
SESW 03 - T14S - R10E
SURFACE: 1131-FSL-2194-FWL
BOTTOM: 1131-FSL-2194-FWL
CARBON COUNTY
UNDESIGNATED FIELD (002)

LEASE TYPE: STA
LEASE NUMBER: ML - 45805

PROPOSED PRODUCING FORMATION: FRSD

INSPECT LOCATION BY: 07/15/97		
TECH REVIEW	Initials	Date
Engineering	JRB	8/6/97
Geology		
Surface		

RECEIVED AND/OR REVIEWED:

✓ Plat
✓ Bond: Federal [] State [✓] Fee []
(Number 224351)
N Potash (Y/N)
N Oil shale (Y/N)
✓ Water permit
(Number commercial supply)
N RDCC Review (Y/N)
(Date: _____)

LOCATION AND SITING:

___ R649-2-3. Unit: _____

___ R649-3-2. General.

✓ R649-3-3. Exception.

___ Drilling Unit.
Board Cause no: _____
Date: _____

COMMENTS: Casing OK, cement stip needed, BOP OK, exc. loc. OR SWD well. UIC application

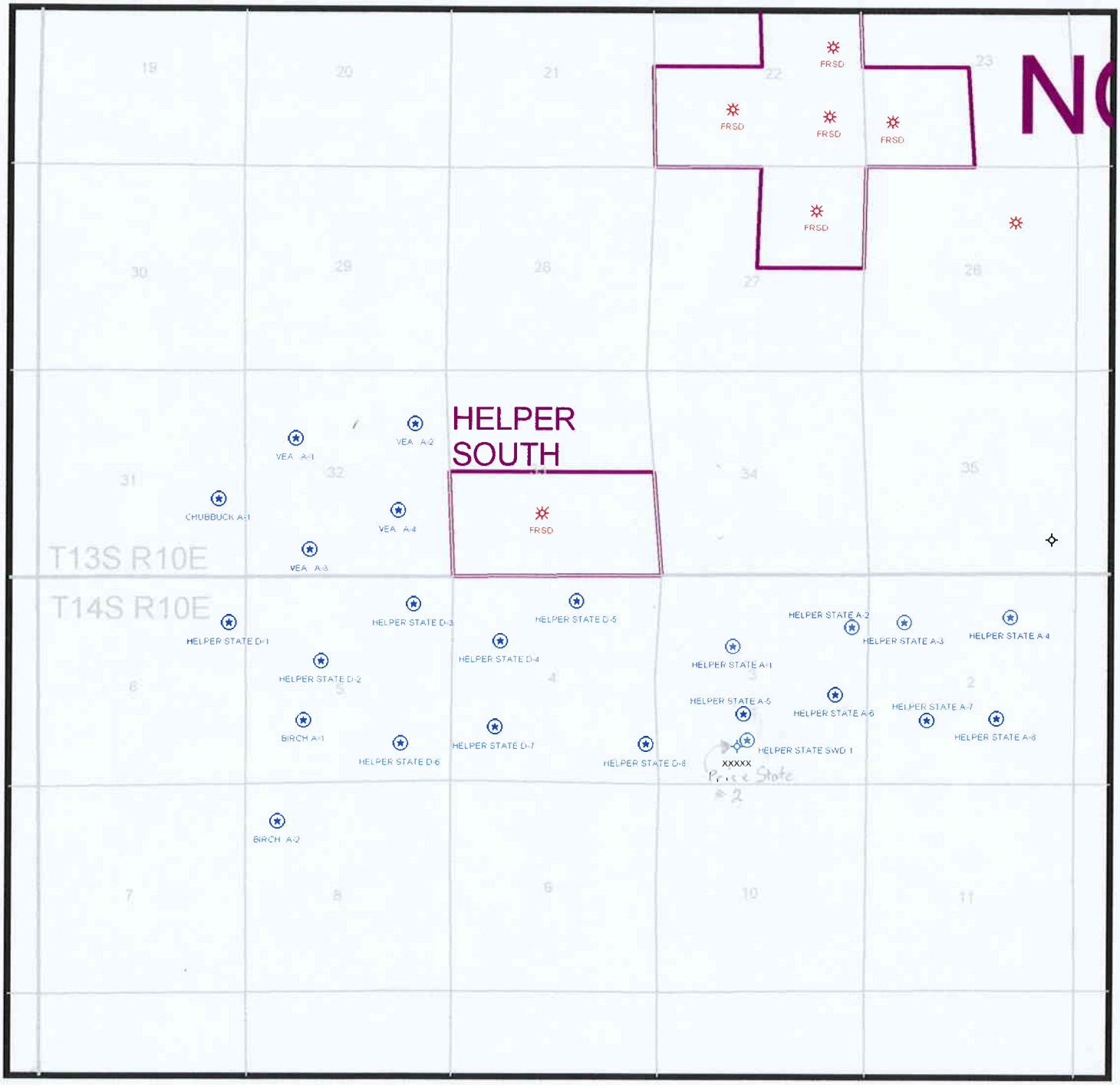
STIPULATIONS: 1. Statement of Basis
2. Cementing stip. - 5½" casing
3. SWD well stip. for UIC application

OPERATOR: ANADARKO (N0035)

FIELD: WILDCAT & UNDESIGNATED (001 & 002)

SEC, TWP, RNG: 31 & 32 T13S, R10E & 2,3,4,5,6,8, T14S, 10E

COUNTY: CARBON UAC: R649-3-2 & R649-3-3



PREPARED:
DATE: 2-JUNE-97

DIVISION OF OIL, GAS AND MINING
APPLICATION FOR PERMIT TO DRILL
STATEMENT OF BASIS

Operator Name: Anadarko Petroleum Corp

Name & Number: Helper State SWD-1

API Number: 43 - 007 - 30361

Location: 1/4,1/4 SESW Sec. 3 T. 14 S R. 10 E

Geology/Ground Water:

A minor aquifer may be encountered close to the surface in the pediment mantle. There are two active springs established at the base of the pediment mantle along the east side of the same pediment as that of the pad (~ 1 mile north). These are the only sediments which may provide a high quality water resource from the surface to the top of the Ferron Sandstone Member of the Mancos Shale. The Garley Canyon Sandstone Beds of the Blue Gate Shale Member of the Mancos Shale pinch out ~ 1 mile west so they should not present a significant ground water resource. The proposed 300' surface casing program will adequately cover the thin surficial deposits.

Reviewer: Chris Kierst
Date: July 17, 1997

Surface:

A highly permeable soil and possible ground water resource militates the need for the protection of a lined pit. Precipitation will be deflected around the location with berms and culverts. There are no nearby culinary of irrigation water supply wells. Provision was made to ensure site rehabilitation, litter and waste control, preservation of drainage patterns and the integrity of local infrastructure, ground water and other resources. Power lines and gathering system will follow access roads. No 404 Dredge and Fill permit is deemed needed for operations directly associated with this location. No flash flood hazard is evident in the area of the location.

Reviewer: Chris Kierst
Date: July 17, 1997

Conditions of Approval/Application for Permit to Drill:

1. **A synthetic pit liner with a minimum thickness of 12 MILS will be required.**
2. **Winter range restriction for deer and elk use no activity Dec. 1 - Apr. 15.**
3. **Site infrastructure as per drilling location plat.**
4. **The location and pit will be bermed on all sides to prevent runoff.**
5. **Disposal of wastes, rubbish, drilling fluid and produced fluids will be accomplished using approved facilities.**
6. **Recommend culverts sufficient to manage expected runoff, standing and surface water in crossed drainages.**
7. **Recommend reseeding infrequently used areas of production location with wildlife forage seed mix preferred by Division of Wildlife Resources (to restore as much of the pad as possible to production of food and cover for wildlife as rapidly as possible) as soon as conveniently possible after completion of well.**

LOCATION OF PRODUCTION FACILITIES AND PIPELINES: Powerline and gathering system will follow approach road.(buried)

SOURCE OF CONSTRUCTION MATERIAL: Native material will be used to gravel approach road and location. Any additional material will be acquired by the construction company from a commercial source.

ANCILLARY FACILITIES: none

WASTE MANAGEMENT PLAN:

Portable toilets; garbage cans on location will be emptied into centralized dumpsters which will be emptied into an approved landfill. Reserve pit will be dried after use and then buried. Water produced during testing and completion will be stored in a lined temporary reserve pit and disposed of by injection, reverse osmosis or evaporation.

ENVIRONMENTAL PARAMETERS

AFFECTED FLOODPLAINS AND/OR WETLANDS: Price River is ~2.5 miles southwest.

FLORA/FAUNA: Sagebrush, cactus, pinion and juniper, / birds, coyotes, rodents, elk, deer, reptiles.

SOIL TYPE AND CHARACTERISTICS: Sandy, cobbled, highly-permeable soil on the Quaternary pediment mantle veneer of the Garley Canyon SS which overlies the existing Blue Gate Shale Member of the Cretaceous Mancos Shale.

SURFACE FORMATION & CHARACTERISTICS: Quaternary pediment mantle. Light brown, brown, gray, or reddish-brown, unconsolidated, massively-bedded sediments consisting of silts, sands, pebbles, boulders, and cobbles in a poorly sorted mixture.

EROSION/SEDIMENTATION/STABILITY: Stable ground with erosion limited to minor dry washes during cloudbursts, high winds and periods of rapid snowmelt with sedimentation occurring during the wane of these episodes.

PALEONTOLOGICAL POTENTIAL: None

RESERVE PIT

CHARACTERISTICS: 130' X 50' X 10' excavated pit, bermed to deflect runoff.

LINER REQUIREMENTS (Site Ranking Form attached): Minimum 12 mil

synthetic liner

SURFACE RESTORATION/RECLAMATION PLAN

Site will be restored to SITLA standards upon abandonment.

SURFACE AGREEMENT: As per state mineral lease

CULTURAL RESOURCES/ARCHAEOLOGY: Cleared and on-file.

OTHER OBSERVATIONS/COMMENTS

Items discussed included: 1)Location of power lines and gathering system. 2)Need for consultation with affected municipalities. 3)Reclamation of unnecessary road segments of existing two-track jeep trails created by more directly accessing location. 4)Minimizing access routes to more direct approaches. 5)Startups after July 15, 1997 as per DWR. 6)Drilling restrictions after December 1, 1997 as per DWR. 9)Investigate the use of existing access roads.

ATTACHMENTS:

4 photos were taken of this site.

C. Kierst	7/16/97 /10:30 AM
DOGM REPRESENTATIVE	DATE/TIME

Evaluation Ranking Criteria and Ranking Score
For Reserve and Onsite Pit Liner Requirements

Site-Specific Factors	Ranking	Site Ranking
Distance to Groundwater (feet)		
>200	0	
100 to 200	5	
75 to 100	10	
25 to 75	15	
<25 or recharge area	20	0
Distance to Surf. Water (feet)		
>1000	0	
300 to 1000	2	
200 to 300	10	
100 to 200	15	
< 100	20	0
Distance to Nearest Municipal Well (feet)		
>5280	0	
1320 to 5280	5	
500 to 1320	10	
<500	15	0
Distance to Other Wells (feet)		
>1320	0	
300 to 1320	10	
<300	20	10
Native Soil Type		
Low permeability	0	
Mod. permeability	10	
High permeability	20	20
Fluid Type		
Air/mist	0	
Fresh Water	5	
TDS >5000 and <10000	15	
TDS >10000 or Oil Base	20	
Mud Fluid containing high levels of hazardous constituents		0
Drill Cuttings		
Normal Rock	0	
Salt or detrimental	10	0
Annual Precipitation (inches)		
<10	0	
10 to 20	5	
>20	10	5
Affected Populations		
<10	0	
10 to 30	6	
30 to 50	8	
>50	10	0
Presence of Nearby Utility Conduits		
Not Present	0	
Unknown	10	
Present	15	0
Final Score		35

ON-SITE PREDRILL EVALUATION

Division of Oil, Gas and Mining

OPERATOR: Anadarko

WELL NAME & NUMBER: Helper State SWD #1

API NUMBER: 43-007-30361

LEASE: State ML - 45805 FIELD/UNIT: Undesignated (002)

LOCATION: 1/4,1/4 SESW Sec: 3 TWP: 14 S RNG: 10 E 1131 FSL 2194 FWL

LEGAL WELL SITING: 460 F SEC. LINE; 460 F 1/4,1/4 LINE; 920 F ANOTHER WELL.

GPS COORD (UTM): x = 518150 E; y = 4386849 N

SURFACE OWNER: State of Utah

PARTICIPANTS

C Kierst (DOGM), B Morris (DWR), Jeff Duncan (Anadarko), David Kay and Heath Lemon (UELS), Mike Barnes (Neilson Const.)

REGIONAL/LOCAL SETTING & TOPOGRAPHY

Western margin of Colorado Plateau/~3.75 miles south of the 1000-1500' Book Cliffs. Shallow canyons (200-250' deep) incise the pediment forming benches north and east of Price, UT, below the Book Cliffs. Pediment gently slopes south. Location is on pediment mantle in an open area on rolling ground marginal to pinion/juniper thickets on a lower bench east of Meads Wash. It is near the head of a draw (small canyon ?) draining to the south and shares the location with an old well site (Price State #2). ~1.5 miles north of Price, Utah. The pad is near the head of a west draining canyon.

SURFACE USE PLAN

CURRENT SURFACE USE: Grazing, recreation and wildlife habitat. Old P&A well pad (price State #2)

PROPOSED SURFACE DISTURBANCE: 270' X 180' pad with 130' X 50' X 10' pit included as part of the location. ~2.8 miles of approach road upgrading needed. Spoils and reserve pit backfill pile (west side) and topsoil stockpiles (south side) will be stored outboard of the pad.

LOCATION OF EXISTING WELLS WITHIN A 1 MILE RADIUS: Helper State A-1, Price State #2 and some 6 other proposed wells.

From: Chris Kierst
To: ASPOSUPT.TLMAIN.EBONNER
Date: 7/14/97 3:26pm
Subject: Onsite reviews of 6 or 7 Anadarko CBM wells in the Helper Project Area

I am scheduling Onsite Reviews in the Anadarko Helper Project Area north of Price, UT for Wednesday, July 16, 1997. The interested parties will meet at 9:00 AM at McDonald's parking lot. One of the wells on the agenda is the Helper State SWD #1 which I am informed has been a subject of discussion with respect to adding onto the Helper State A-5 location. Other wells currently on the agenda are the Helper State A-3, and A-6 through the A-9. Another APD currently being processed may be added to the agenda if the file is assembled in time to make the scheduling. It should be noted that the the original plan has changed from a total of 21 wells to a total of 25 wells and that 12 wells (including the SWD #1) are prioritized rather than the original 21. Are you interested in attending?

CC: ASPOSUPT.TLMAIN.JCOOPER

From: Ed Bonner
To: NRDOMAIN.NROGM(CKIERST)
Date: 7/15/97 11:45am
Subject: Onsite reviews of 6 or 7 Anadarko CBM wells in the Helper Project Area -Reply

Chris,

Our office will be unable to attend the presites as planned.

Thanks for the invitation. Maybe next time.

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

August 25, 1997

Anadarko Petroleum Corporation
17001 Northchase Drive
Houston, Texas 77060

Re: Helper State SWD 1 Well, 1131' FSL, 2194' FWL, SE SW, Sec. 3, T. 14 S., R. 10 E., Carbon County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-007-30361.

Sincerely,

John R. Baza
Associate Director

lwp
Enclosures
cc: Carbon County Assessor
Bureau of Land Management, Moab District Office

Operator: Anadarko Petroleum Corporation

Well Name & Number: Helper State SWD 1

API Number: 43-015-30323

Lease: FEE

Location: NW NW **Sec.** 14 **T.** 18 S. **R.** 7 E.

Conditions of Approval

1. General
   Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for Permit to Drill.

2. Notification Requirements
   Notify the Division within 24 hours following spudding the well or commencing drilling operations. Contact Jimmie Thompson at (801)538-5336.

   Notify the Division prior to commencing operations to plug and abandon the well. Contact John R. Baza (801)538-5334 or Mike Hebertson at (801) 538-5333.

3. Reporting Requirements
   All required reports, forms and submittals shall be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis dated June 17, 1997 (copy attached).

5. The cement volumes for the 5-1/2" casing shall be determined from actual hole conditions and the setting depth of the casing in order to place cement from the pipe setting depth back to the surface casing seat.

6. Prior to injection of fluid into the well, the operator shall apply for and obtain proper approval from the Division as required by Rule R649-5-2 at seq. of the Oil and Gas Conservation General Rules.

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

Name of Company: ANADARKO PETROLEUM

Well Name: HELPER STATE SWD # 1

Api No. 43-007-30361

Section: 3 Township: 14S Range: 10E County: CARBON

Drilling Contractor: _____

Rig #____

SPUDDED:

Date: 9/20/97

Time: _____

How: DRY HOLE

Drilling will commence: _____

Reported by: JEFF DUNCAN

Telephone NO.: _____

Date: 9/19/97 Signed: JLT

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

ENTITY ACTION FORM - FORM 6

OPERATOR Anadarko Petroleum Corporation

ADDRESS 17001 Northchase Drive
Houston, Texas 77060

OPERATOR ACCT. NO. N-0035

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION QQ	SC	TP	RG	COUNTY	SPUD DATE	EFFECTIVE DATE
A	99999	12258	43-007-30361	Helper State SWD 1	SW	3	14S	10E	Carbon	09/26/97	09/26/97
WELL 1 COMMENTS: New Single Well. Entity added 11-6-97 Lec											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											

ACTION CODES (See instructions on back of form)
- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

Signature

Staff Drilling Eng. 30.Oct.97
Title Date

Phone No. (281) 875-1101

FORM 9

STATE OF UTAH

DIVISION OF OIL, GAS AND MINING

5. Lease Designation and Serial Number: ML 45805

6. If Indian, Allottee or Tribe Name:

7. Unit Agreement Name:

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, deepen existing wells, or to reenter plugged and abandoned wells. Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form for such proposals.

8. Well Name and Number: Helper State SWD 1

1. Type of Well: OIL ☐ GAS ☐ OTHER: Coalbed Methane

9. API Well Number: 43-007-30361

2. Name of Operator: Anadarko Petroleum Corporation

10. Field and Pool, or Wildcat: Helper CBM

3. Address and Telephone Number: 17001 Northchase Drive, Houston, TX 77060 281-875-1101

4. Location of Well
Footages: 1131 FSL & 2194 FWL
QQ, Sec., T., R., M.: SW/4 Sec 3, T14S, 10E

County: Carbon

State: Utah

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT (Submit in Duplicate)		SUBSEQUENT REPORT (Submit Original Form Only)	
☐ Abandonment	☐ New Construction	☐ Abandonment *	☐ New Construction
☐ Casing Repair	☐ Pull or Alter Casing	☐ Casing Repair	☐ Pull or Alter Casing
☐ Change of Plans	☐ Recompletion	☐ Change of Plans	☐ Shoot or Acidize
☐ Conversion to Injection	☐ Shoot or Acidize	☐ Conversion to Injection	☐ Vent or Flare
☐ Fracture Treat	☐ Vent or Flare	☐ Fracture Treat	☐ Water Shut-Off
☐ Multiple Completion	☐ Water Shut-Off	☐ Other _____	
☐ Other Spud Notification 0500 Hrs 09/26/97			
Approximate date work will start _____		Date of work completion _____	

Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form.

* Must be accompanied by a cement verification report.

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

RECEIVED
NOV 06 1997
DIV. OF OIL, GAS & MINING

13. Name & Signature: Dave Hudspeth Title: Staff Drilling Engineer Date: 30.Oct.97

(This space for State use only)

(1\93) (See Instructions on Reverse Side)

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

RECEIVED
DEC 04 1997
DIV. OF OIL, GAS & MINING

APPLICATION FOR INJECTION WELL - UIC FORM 1

OPERATOR Anadarko Petroleum Corporation
ADDRESS 17001 Northchase Drive
Houston, TX 77251-1330

Well name and number: Helper State SWD #1

Field or Unit name: Helper Field Lease no. _____

Well location: QQ SESW section 3 township 14S range 10E county Carbon

Is this application for expansion of an existing project? . . Yes [ ] No [X]

Will the proposed well be used for: Enhanced Recovery? . . Yes [ ] No [X]
Disposal? . . . . . Yes [X] No [ ]
Storage? . . . . . Yes [ ] No [X]

Is this application for a new well to be drilled? . . . . . Yes [ ] No [X]

If this application is for an existing well,
has a casing test been performed on the well? . . . . . Yes [X] No [ ]
Date of test: 11/05/97
API number: 43-015-30323

Proposed injection interval: from 5920 to 6320

Proposed maximum injection: rate * pressure 640 psig
*Maximum injection rate to be limited by maximum pressure.
Proposed injection zone contains [ ] oil, [ ] gas, and/or [ ] fresh water within ½ mile of the well.

IMPORTANT: Additional information as required by R615-5-2 should accompany this form.

List of Attachments: Location Plat, Ownership Plat, Wellbore Diagram, Geological Report, Fracture Information, Logs, Area of Review

I certify that this report is true and complete to the best of my knowledge.

Name Shad Frazier
Title Engineer
Phone No. (281) 873-1227

Signature Tom Ruckins for Shad Frazier
Date 11/18/97

(State use only)
Application approved by _____ Title _____
Approval Date _____

Comments:

(3/89)

HELPER STATE SWD #1 PERMIT APPLICATION

Anadarko Petroleum Corporation requests a salt water disposal injection permit for the Helper State SWD #1 located in Section 3-T14S-R10E, Carbon County, Utah. Pursuant to the Permitting Requirements for Class II Injection Wells, enclosed is UIC Form 1 with the appropriate accompanying documents and attachments. An acreage and well location plat is included in Section 1; along with the UIC Form 1, wellbore diagram and casing integrity test. Anadarko is the only operator in the outlined area and the State of Utah owns the surface acreage.

Based on analyses of both the Ferron Coal produced water and the water of the Navajo formation, no compatibility problems will be caused by mixing of the two waters. In fact, injection of the Ferron Coal produced water reduces the total dissolved solids content and scaling tendency of the Navajo water. Section 2 contains further detail concerning the fluid testing.

Injectivity tests have been performed on the Navajo formation and the data is included in Section 3. Based on the results of this testing, Anadarko has applied for a maximum surface injection pressure of 640 psig. Although the injection rate corresponding to the indicated parting pressure from the step rate test was 3600 BWPD, Anadarko requests the maximum injection volume be limited by the maximum injection pressure.

Contents

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

RECEIVED
DEC 04 1997
DIV. OF OIL, GAS & MINING

APPLICATION FOR INJECTION WELL - UIC FORM 1

OPERATOR Anadarko Petroleum Corporation
ADDRESS 17001 Northchase Drive
Houston, TX 77251-1330

Well name and number: Helper State SWD #1

Field or Unit name: Helper Field Lease no. _____

Well location: QQ SESW section 3 township 14S range 10E county Carbon

Is this application for expansion of an existing project? . . Yes [ ] No [X]

Will the proposed well be used for: Enhanced Recovery? . . Yes [ ] No [X]
Disposal? . . . . . Yes [X] No [ ]
Storage? . . . . . Yes [ ] No [X]

Is this application for a new well to be drilled? . . . . . Yes [ ] No [X]

If this application is for an existing well,
has a casing test been performed on the well? . . . . . Yes [X] No [ ]
Date of test: 11/05/97
API number: 43-015-30323

Proposed injection interval: from 5920 to 6320

Proposed maximum injection: rate * pressure 640 psig
*Maximum injection rate to be limited by maximum pressure.
Proposed injection zone contains [ ] oil, [ ] gas, and/or [ ] fresh water within ½ mile of the well.

IMPORTANT: Additional information as required by R615-5-2 should accompany this form.

List of Attachments: Location Plat, Ownership Plat, Wellbore Diagram, Geological Report, Fracture Information, Logs, Area of Review

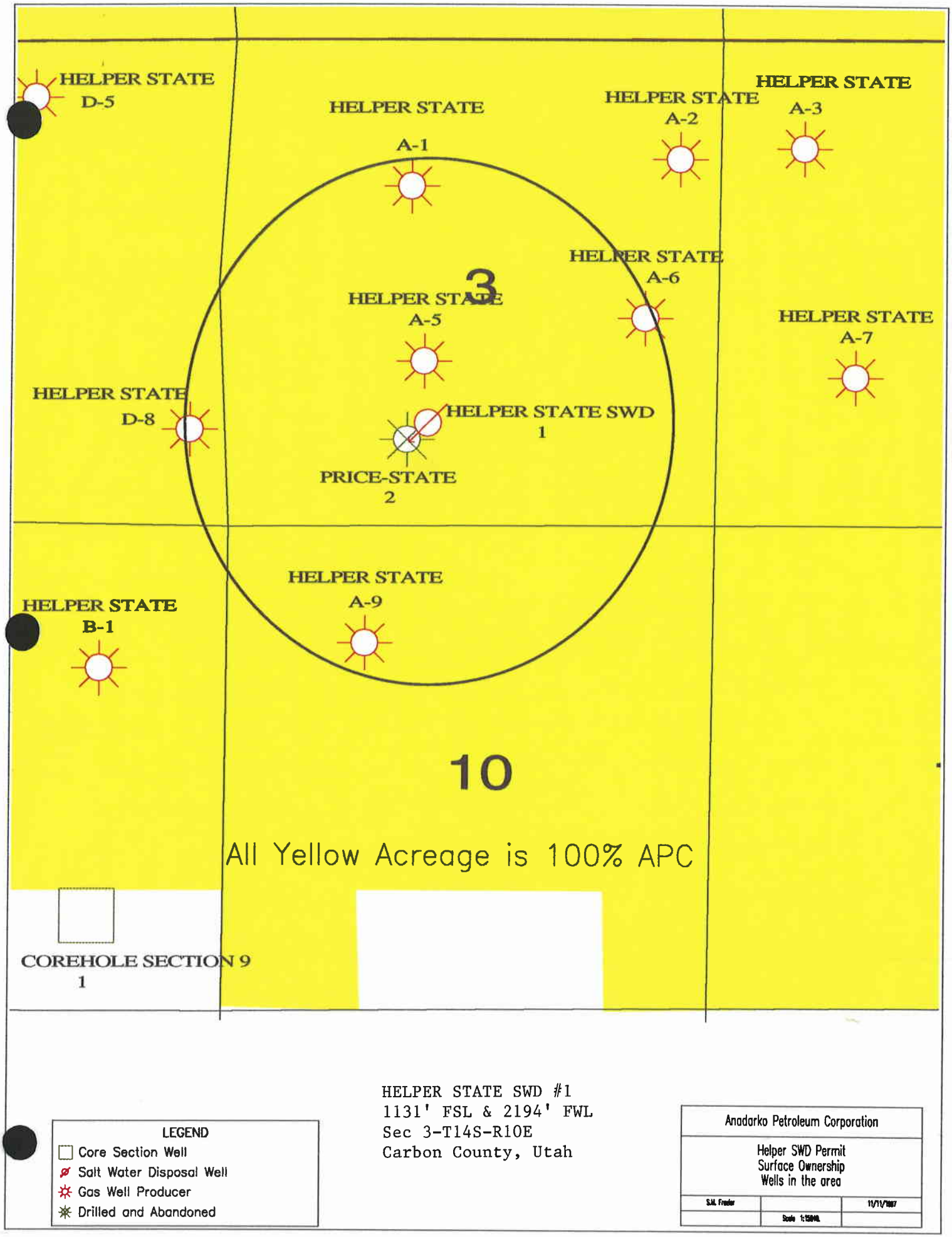
I certify that this report is true and complete to the best of my knowledge.

Name Shad Frazier Signature Tom Rucking for Shad Frazier
Title Engineer Date 11/18/97
Phone No. (281) 873-1227

(State use only)
Application approved by _____ Title _____
Approval Date _____

Comments:

(3/89)

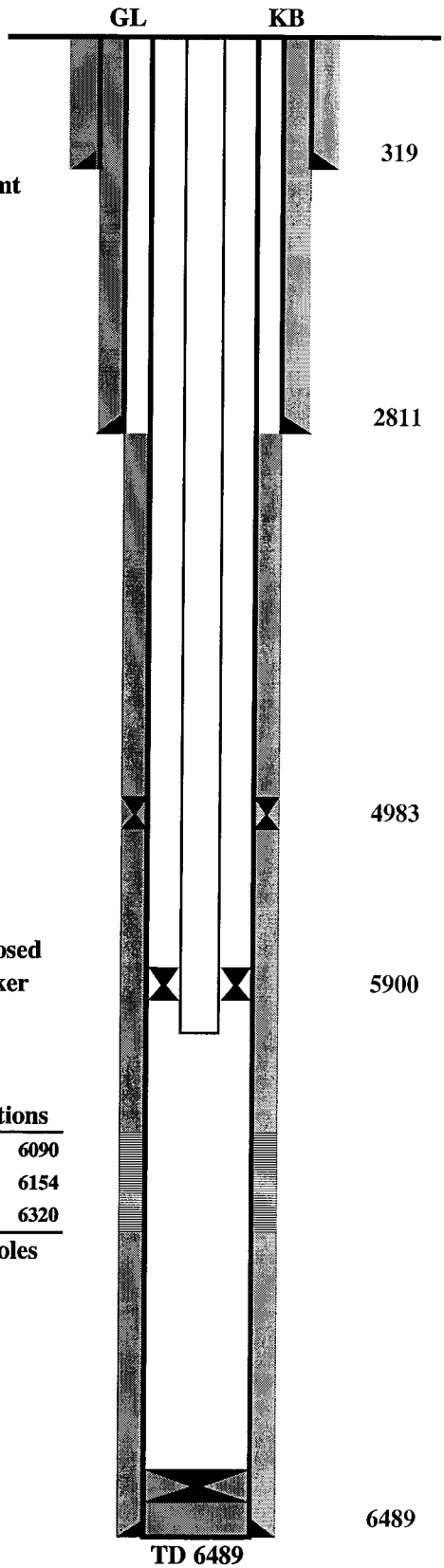

HELPER STATE
D-5
HELPER STATE
A-1
HELPER STATE
A-2
HELPER STATE
A-3
3
HELPER STATE
A-6
HELPER STATE
A-5
HELPER STATE
A-7
HELPER STATE
D-8
HELPER STATE SWD
1
PRICE-STATE
2
HELPER STATE
A-9
HELPER STATE
B-1
10
All Yellow Acreage is 100% APC
COREHOLE SECTION 9
1
LEGEND
Core Section Well
Salt Water Disposal Well
Gas Well Producer
Drilled and Abandoned
HELPER STATE SWD #1
1131' FSL & 2194' FWL
Sec 3-T14S-R10E
Carbon County, Utah
Anadarko Petroleum Corporation
Helper SWD Permit
Surface Ownership
Wells in the area
S.M. Frazier
11/11/1997
Scale 1:15840

Helper State SWD #1

1131' FSL & 2194' FWL Sec 3-T14S-R10E

Carbon County, Utah

	SPUD	RIG OFF
SURFACE	9/26/97	10/27/97
PRODUCTION	11/5/97	



13 3/8" 48#
Set w/ 360 sxs cmt

8 5/8" 24# K-55

DV Tool

Proposed Packer

(Holes)	Perforations	
(170)	5920 -	6090
(42)	6112 -	6154
(64)	6256 -	6320
(276)	Total Holes	

Hole Size 7 7/8
5 1/2" 17# N-80
694 sxs cmt

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN	ROD BREAKDOWN

DEVIATION ANGLE		FORMATION	TOP
1264	1 3/4	Morrision	3380
2258	2 3/10		
3946	2 3/4		
4380	2 1/2		

LAST REVISED: 12/2/97

Anadarko Petroleum

Helper State SWD #1

Initial Pressure Test

Post Treatment Summary

Section 3

Township 14S

Range 10E

Casing Integrity Test

Treatment Date: Nov. 5, 1997

JOB DATA LISTING

Customer: ANADARKO
Well Desc.: HELPER STATE SWD #1
Formation: PRESSURE TEST

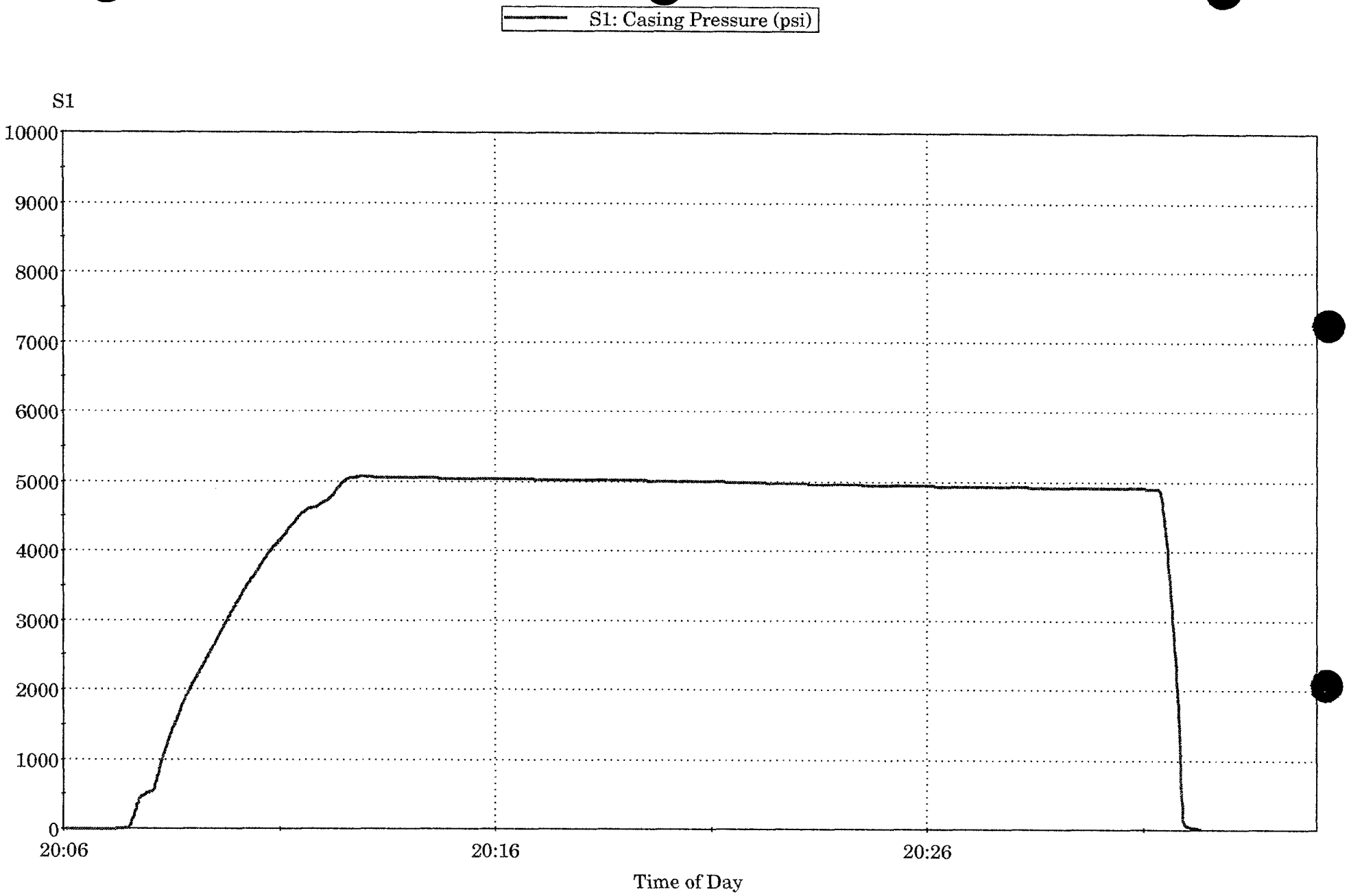
Date: Wednesday November 05, 1997
Ticket #: 110597
Job Type: PRESSURE TEST

Time of Day	Stage	Casing Pressure
Unknown		psi
20:06:03	0	0
20:06:23	0	0
20:06:43	0	4
20:07:03	0	4
20:07:23	0	12
20:07:43	0	370
20:08:03	0	548
20:08:23	0	1226
20:08:43	0	1746
20:09:03	0	2165
20:09:23	0	2549
20:09:43	0	2948
20:10:03	0	3317
20:10:23	0	3641
20:10:43	0	3948
20:11:03	0	4200
20:11:23	0	4456
20:11:43	0	4619
20:12:03	0	4716
20:12:23	0	4943
20:12:43	0	5056
20:13:03	0	5062
20:13:23	0	5058
20:13:43	0	5055
20:14:03	0	5052
20:14:23	0	5048
20:14:43	0	5045
20:15:03	0	5044
20:15:23	0	5041
20:15:43	0	5039
20:16:03	0	5036
20:16:23	0	5034
20:16:43	0	5032
20:17:03	0	5030
20:17:23	0	5028
20:17:43	0	5026
20:18:03	0	5025
20:18:23	0	5022
20:18:43	0	5020
20:19:03	0	5018
20:19:23	0	5016
20:19:43	0	5015
20:20:03	0	5013
20:20:23	0	5011
20:20:43	0	5007

Customer: ANADARKO
Well Desc.: HELPER STATE SWD #1
Formation: PRESSURE TEST

Date: Wednesday November 05, 1997
Ticket #: 110597
Job Type: PRESSURE TEST

Time of Day	Stage	Casing Pressure
Unknown		psi
20:21:03	0	5004
20:21:23	0	4999
20:21:43	0	4995
20:22:03	0	4988
20:22:23	0	4982
20:22:43	0	4977
20:23:03	0	4972
20:23:23	0	4967
20:23:43	0	4963
20:24:03	0	4959
20:24:23	0	4956
20:24:43	0	4951
20:25:03	0	4948
20:25:23	0	4945
20:25:43	0	4943
20:26:03	0	4940
20:26:23	0	4938
20:26:43	0	4935
20:27:03	0	4932
20:27:23	0	4930
20:27:43	0	4928
20:28:03	0	4926
20:28:23	0	4924
20:28:43	0	4922
20:29:03	0	4919
20:29:23	0	4917
20:29:43	0	4916
20:30:03	0	4914
20:30:23	0	4911
20:30:43	0	4909
20:31:03	0	4908
20:31:23	0	4837
20:31:43	0	2596
20:32:03	0	45
20:32:23	0	16
20:32:43	0	10
20:33:03	0	9
20:33:23	0	9
20:33:43	0	9
18:39:12		9



CUSTOMER: ANADARKO		TICKET: 110597	DATE: Wed 05-Nov-97
WELL DESC: HELPER STATE SWD #1		FORMATION: PRESSURE TEST	

NALCO/EXXON
ENERGY CHEMICALS, L.P.

Downhole Water Analysis 11/18/97
Copyright 1991-1995, Nalco Chemical Company CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

Well Number : COMPOSITE OF PRODUCED WATER
Water Source : COMPRESSOR STATION

DISSOLVED SOLIDS

Cations	mg/l	meq/l		mg/l
Sodium Na+	8770.8	381.3	as NaCL	667.9
Calcium Ca++	440.0	22.0	as CaCO3	1098.8
Magnesium Mg++	220.0	18.1	as CaCO3	906.0
Barium Ba++	240.0	3.5	as CaCO3	407.8
Strontium Sr++	0.0	0.0	as CaCO3	0.0
Total Cations	9670.8	424.9		

Anions	mg/l	meq/l		mg/l
Chloride Cl-	14000.0	394.9	as NaCL	23078.5
Sulfate SO4=	0.0	0.0	as Na2SO4	0.0
Carbonate CO3=	0.0	0.0	as CaCO3	0.0
Bicarb. HCO3-	1830.0	30.0	as CaCO3	3002.3
Total Anions	15830.0	424.9		

Total Solids 25500.8

METALS

Total Iron,Fe	15.7	as Fe	15.7
Acid to Phen,CO2	0.4	as CaCO3	1.0

OTHER PROPERTIES

pH	7.2
Specific Gravity	~~1.2~~ 1.02
Turbidity jtu	20.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	0.0
Temperature F	100.0

NALCO/EXXON
ENERGY CHEMICALS, L.P.

>>> Scaling Indices <<<

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	0.18	NA	NA	NA
80.0	0.37	NA	NA	NA
100.0	0.61	NA	NA	NA
120.0	0.90	NA	NA	NA
140.0	1.22	NA	NA	NA
160.0	1.59	NA	NA	NA
180.0	1.99	NA	NA	NA
200.0	2.44	NA	NA	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

NALCO/EXXON
ENERGY CHEMICALS, L.P.

Downhole Water Analysis 11/18/97
Copyright 1991-1995, Nalco Chemical Company CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

Well Number : SWD #1 3:00-5:00 PM 11/12/97
Water Source : PERFS 5920-6090 U. Navajo

DISSOLVED SOLIDS

Cations	mg/l	meq/l		mg/l
Sodium Na+	22597.3	982.5	as NaCL	1087.4
Calcium Ca++	1560.0	77.8	as CaCO3	3895.6
Magnesium Mg++	146.0	12.0	as CaCO3	601.2
Barium Ba++	40.0	0.6	as CaCO3	68.0
Strontium Sr++	0.0	0.0	as CaCO3	0.0
Total Cations	24343.3	1072.9		

Anions	mg/l	meq/l		mg/l
Chloride Cl-	33000.0	930.8	as NaCL	54399.3
Sulfate SO4=	3750.0	78.1	as Na2SO4	5545.7
Carbonate CO3=	0.0	0.0	as CaCO3	0.0
Bicarb. HCO3-	3904.0	64.0	as CaCO3	6405.0
Total Anions	40654.0	1072.9		

Total Solids 64997.3

METALS

Total Iron,Fe	5.7	as Fe	5.7
Acid to Phen,CO2	0.4	as CaCO3	1.0

OTHER PROPERTIES

pH	7.3
Specific Gravity	1.0
Turbidity jtu	20.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	0.0
Temperature F	100.0

JV0095

NALCO/EXXON
ENERGY CHEMICALS, L.P.

>>> Scaling Indices <<<

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	1.13	-12.00	NA	NA
80.0	1.33	-12.33	0.58	NA
100.0	1.57	-12.44	0.58	NA
120.0	1.85	-11.90	0.58	NA
140.0	2.18	-11.11	0.58	NA
160.0	2.54	-9.79	0.58	NA
180.0	2.95	-8.69	0.58	NA
200.0	3.40	NA	0.58	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

NALCO/EXXON
ENERGY CHEMICALS, L.P.

Downhole Water Analysis 11/18/97
Copyright 1991-1995, Nalco Chemical Company CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

Well Number : SWD #1 9:00-11:00 AM 11/10/97
Water Source : PERFS 6112-6154 L. Navajo

DISSOLVED SOLIDS

Cations	mg/l	meq/l		mg/l
Sodium Na+	30210.1	1313.5	as NaCL	2261.9
Calcium Ca++	1680.0	83.8	as CaCO3	4195.3
Magnesium Mg++	146.0	12.0	as CaCO3	601.2
Barium Ba++	70.0	1.0	as CaCO3	118.9
Strontium Sr++	0.0	0.0	as CaCO3	0.0
Total Cations	32106.1	1410.3		

Anions	mg/l	meq/l		mg/l
Chloride Cl-	41000.0	1156.5	as NaCL	67587.0
Sulfate SO4=	9500.0	197.9	as Na2SO4	14049.2
Carbonate CO3=	0.0	0.0	as CaCO3	0.0
Bicarb. HCO3-	3416.0	56.0	as CaCO3	5604.4
Total Anions	53916.0	1410.3		

Total Solids 86022.1

METALS

Total Iron,Fe	19.5	as Fe	19.5
Acid to Phen,CO2	0.4	as CaCO3	1.0

OTHER PROPERTIES

pH	7.3
Specific Gravity	1.0
Turbidity jtu	20.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	0.0
Temperature F	100.0

NALCO/EXXON
ENERGY CHEMICALS, L.P.

>>> Scaling Indices <<<

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	1.23	26.59	NA	NA
80.0	1.42	26.29	1.02	NA
100.0	1.66	26.29	1.02	NA
120.0	1.94	27.21	1.02	NA
140.0	2.28	27.62	1.02	NA
160.0	2.66	28.34	1.02	NA
180.0	3.08	28.89	1.02	NA
200.0	3.56	NA	1.02	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

NALCO/EXXON
ENERGY CHEMICALS, L.P.

Downhole Water Analysis 11/18/97
 CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

Well Number : SWD #1 9:00-11:00 AM 11/7/97
Water Source : PERFS 6256-6320 Wingate

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	38657.9	1680.8	as NaCL	1391.9
Calcium	Ca++	1560.0	77.8	as CaCO3	3895.6
Magnesium	Mg++	366.0	30.1	as CaCO3	1507.2
Barium	Ba++	60.0	0.9	as CaCO3	102.0
Strontium	Sr++	0.0	0.0	as CaCO3	0.0
Total Cations		40643.9	1789.6		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	55000.0	1551.3	as NaCL	90665.5
Sulfate	SO4=	8750.0	182.3	as Na2SO4	12940.0
Carbonate	CO3=	0.0	0.0	as CaCO3	0.0
Bicarb.	HCO3-	3416.0	56.0	as CaCO3	5604.4
Total Anions		67166.0	1789.6		

Total Solids 107809.9

METALS

Total Iron,Fe	18.6	as Fe	18.6
Acid to Phen,CO2	0.4	as CaCO3	1.0

OTHER PROPERTIES

pH	7.3
Specific Gravity	1.1
Turbidity jtu	20.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	0.0
Temperature F	100.0

NALCO/EXXON
ENERGY CHEMICALS, L.P.

>>> Scaling Indices <<<

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	1.13	20.62	NA	NA
80.0	1.33	20.29	0.88	NA
100.0	1.57	20.26	0.88	NA
120.0	1.85	21.13	0.88	NA
140.0	2.18	21.67	0.88	NA
160.0	2.56	22.58	0.88	NA
180.0	2.98	23.29	0.88	NA
200.0	3.45	NA	0.88	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

NALCO/EXXON
ENERGY CHEMICALS, L.P.

VISCO Water Compatibility Report 11/18/97
 CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

PRODUCED WATER AND SWD#1
PERFS 5920-6090

PRODUCED WATER (NAVAJO)
Sample Date : 11/12/97
Water Source: Produced
FRESH WATER (FERRON)
Sample date : 11/10/97
Water Source: Fresh

Temperature Degrees F	Water Mixture Fresh/Produced	CaCO3 Index Stiff/Davis	CaSO4 Index Skillman	Actual CaSO4 Mg/L
60	0/100	0.83	-11.16	5304
	20/80	0.73	-22.05	4250
	40/60	0.62	-32.49	3187
	50/50	0.56	-37.52	2656
	60/40	0.48	-42.43	2125
	80/20	0.31	-51.84	1062
	100/0	0.09	0.00	0
80	0/100	1.03	-11.48	
	20/80	0.93	-22.35	
	40/60	0.82	-32.77	
	50/50	0.75	-37.80	
	60/40	0.68	-42.71	
	80/20	0.51	-52.10	
	100/0	0.28	0.00	
100	0/100	1.27	-11.60	
	20/80	1.17	-22.49	
	40/60	1.06	-32.92	
	50/50	0.99	-37.96	
	60/40	0.92	-42.87	
	80/20	0.75	-52.29	
	100/0	0.52	0.00	

NALCO/EXXON
ENERGY CHEMICALS, L.P.

120	0/100	1.55	-11.11
	20/80	1.45	-22.11
	40/60	1.34	-32.65
	50/50	1.28	-37.74
	60/40	1.20	-42.70
	80/20	1.04	-52.22
	100/0	0.81	0.00
140	0/100	1.88	-10.08
	20/80	1.78	-21.06
	40/60	1.67	-31.61
	50/50	1.60	-36.71
	60/40	1.53	-41.68
	80/20	1.36	-51.22
	100/0	1.14	0.00
160	0/100	2.24	-8.97
	20/80	2.15	-19.94
	40/60	2.04	-30.48
	50/50	1.97	-35.57
	60/40	1.91	-40.55
	80/20	1.74	-50.10
	100/0	1.51	0.00
180	0/100	2.65	-7.84
	20/80	2.56	-18.80
	40/60	2.45	-29.33
	50/50	2.39	-34.42
	60/40	2.32	-39.40
	80/20	2.16	-48.96
	100/0	1.93	0.00

NALCO/EXXON
ENERGY CHEMICALS, L.P.

VISCO Water Compatibility Report 11/18/97
 CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

PRODUCED WATER AND SWD#1
PERFS 6112-6154

PRODUCED WATER (NAVAJO)
Sample Date: 11/10/97
Water Source: Produced
FRESH WATER (FERRON)
Sample date : 11/10/97
Water Source: Fresh

Temperature Degrees F	Water Mixture Fresh/Produced	CaCO3 Index Stiff/Davis	CaSO4 Index Skillman	Actual CaSO4 Mg/L
60	0/100	0.79	30.83	5712
	20/80	0.68	12.90	4869
	40/60	0.56	-5.08	4026
	50/50	0.50	-14.13	3604
	60/40	0.44	-23.23	3183
	80/20	0.29	-41.69	2339
	100/0	0.09	0.00	0
80	0/100	0.99	30.51	
	20/80	0.87	12.59	
	40/60	0.76	-5.39	
	50/50	0.70	-14.43	
	60/40	0.64	-23.52	
	80/20	0.48	-41.96	
	100/0	0.28	0.00	
100	0/100	1.23	30.45	
	20/80	1.11	12.50	
	40/60	1.00	-5.50	
	50/50	0.94	-14.55	
	60/40	0.88	-23.66	
	80/20	0.72	-42.13	
	100/0	0.52	0.00	

NALCO/EXXON
ENERGY CHEMICALS, L.P.

120	0/100	1.52	31.16
	20/80	1.40	13.11
	40/60	1.28	-5.03
	50/50	1.22	-14.16
	60/40	1.16	-23.35
	80/20	1.01	-41.99
	100/0	0.81	0.00
140	0/100	1.84	31.99
	20/80	1.72	14.02
	40/60	1.61	-4.05
	50/50	1.55	-13.15
	60/40	1.48	-22.33
	80/20	1.34	-40.97
	100/0	1.14	0.00
160	0/100	2.21	32.83
	20/80	2.09	14.98
	40/60	1.97	-3.00
	50/50	1.92	-12.07
	60/40	1.85	-21.22
	80/20	1.71	-39.84
	100/0	1.51	0.00
180	0/100	2.63	33.67
	20/80	2.50	15.94
	40/60	2.38	-1.94
	50/50	2.33	-10.97
	60/40	2.27	-20.09
	80/20	2.13	-38.69
	100/0	1.93	0.00

NALCO/EXXON
ENERGY CHEMICALS, L.P.

VISCO Water Compatibility Report 11/18/97
 CREG WILKINS

CLIENT NAME : ANADARKO PETROLEUM CORP.
CLIENT LOCATION: CARBON CO., UTAH HELPER FIELD

PRODUCED WATER AND SWD#1
PERFS 6256-6320

PRODUCED WATER (NAVAJO)
Sample Date : 11/07/97
Water Source: Produced
FRESH WATER (FERRON)
Sample date : 11/10/97
Water Source: Fresh

Temperature Degrees F	Water Mixture Fresh/Produced	CaCO3 Index Stiff/Davis	CaSO4 Index Skillman	Actual CaSO4 Mg/L
60	0/100	0.83	16.80	5304
	20/80	0.66	-0.17	4543
	40/60	0.52	-16.52	3781
	50/50	0.45	-24.44	3400
	60/40	0.39	-32.16	3019
	80/20	0.26	-46.93	2258
	100/0	0.09	0.00	0
80	0/100	1.03	16.47	
	20/80	0.86	-0.52	
	40/60	0.72	-16.87	
	50/50	0.65	-24.77	
	60/40	0.59	-32.47	
	80/20	0.45	-47.21	
	100/0	0.28	0.00	
100	0/100	1.27	16.45	
	20/80	1.10	-0.58	
	40/60	0.96	-16.96	
	50/50	0.89	-24.87	
	60/40	0.83	-32.59	
	80/20	0.69	-47.36	
	100/0	0.52	0.00	

NALCO/EXXON
ENERGY CHEMICALS, L.P.

120	0/100	1.55	17.39
	20/80	1.39	0.27
	40/60	1.24	-16.28
	50/50	1.17	-24.30
	60/40	1.11	-32.14
	80/20	0.97	-47.16
	100/0	0.81	0.00
140	0/100	1.89	18.09
	20/80	1.72	1.12
	40/60	1.57	-15.32
	50/50	1.50	-23.30
	60/40	1.44	-31.11
	80/20	1.30	-46.13
	100/0	1.14	0.00
160	0/100	2.26	18.77
	20/80	2.09	1.97
	40/60	1.93	-14.31
	50/50	1.86	-22.24
	60/40	1.80	-30.01
	80/20	1.67	-44.99
	100/0	1.51	0.00
180	0/100	2.69	19.45
	20/80	2.51	2.84
	40/60	2.34	-13.30
	50/50	2.27	-21.17
	60/40	2.21	-28.90
	80/20	2.09	-43.84
	100/0	1.93	0.00

Calculation of Injection Pressure Limitation for Navajo Formation Interval 5920-6320

To determine the theoretical maximum surface pressure limitation conduct a step rate test to determine formation parting pressure.
(All Data is determined from following graph)

3250 Formation Parting Pressure Bottom Hole FPPBH
690 Corresponding Surface Pressure

Optimum Operating Pressure should be
Formation parting Pressure -50 Psi

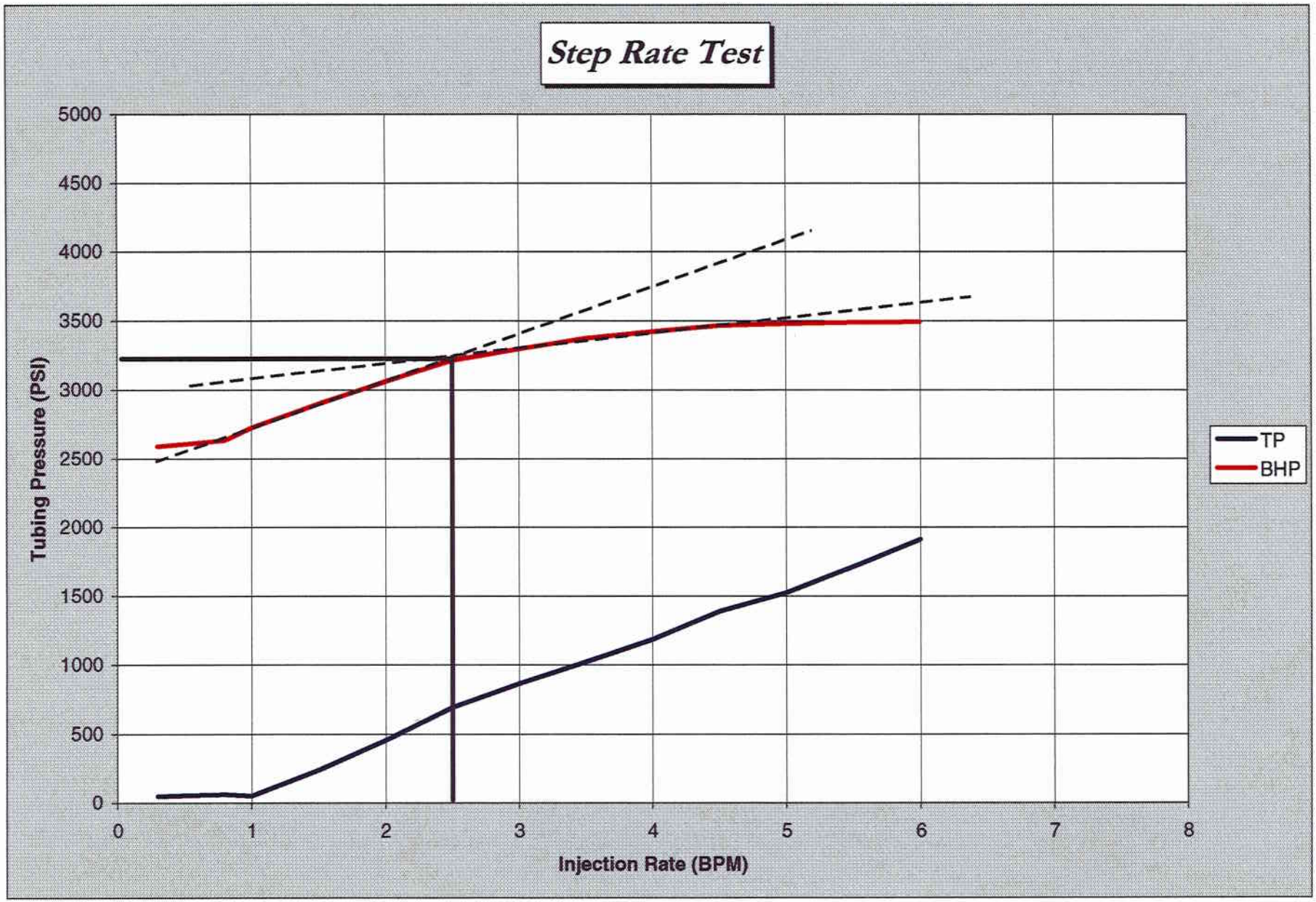
3200 psi - Optimum Downhole Pressure
640 psi - Optimum Surface pressure

2.25 Corresponding Rate BPM
3240 Corresponding Rate Per Day

$Pm = [FG - (0.433)*(Sg)]*D$

0.549 FG = Fracture Gradient = FPPBH/D psi/ft
1.02 Sg = Specific Gravity
5920 D = Depth Ft.

640 psi - Average Pressure at Wellhead
690 psi - Maximum Pressure at Wellhead



Carbon County, Utah

Shad Frazier

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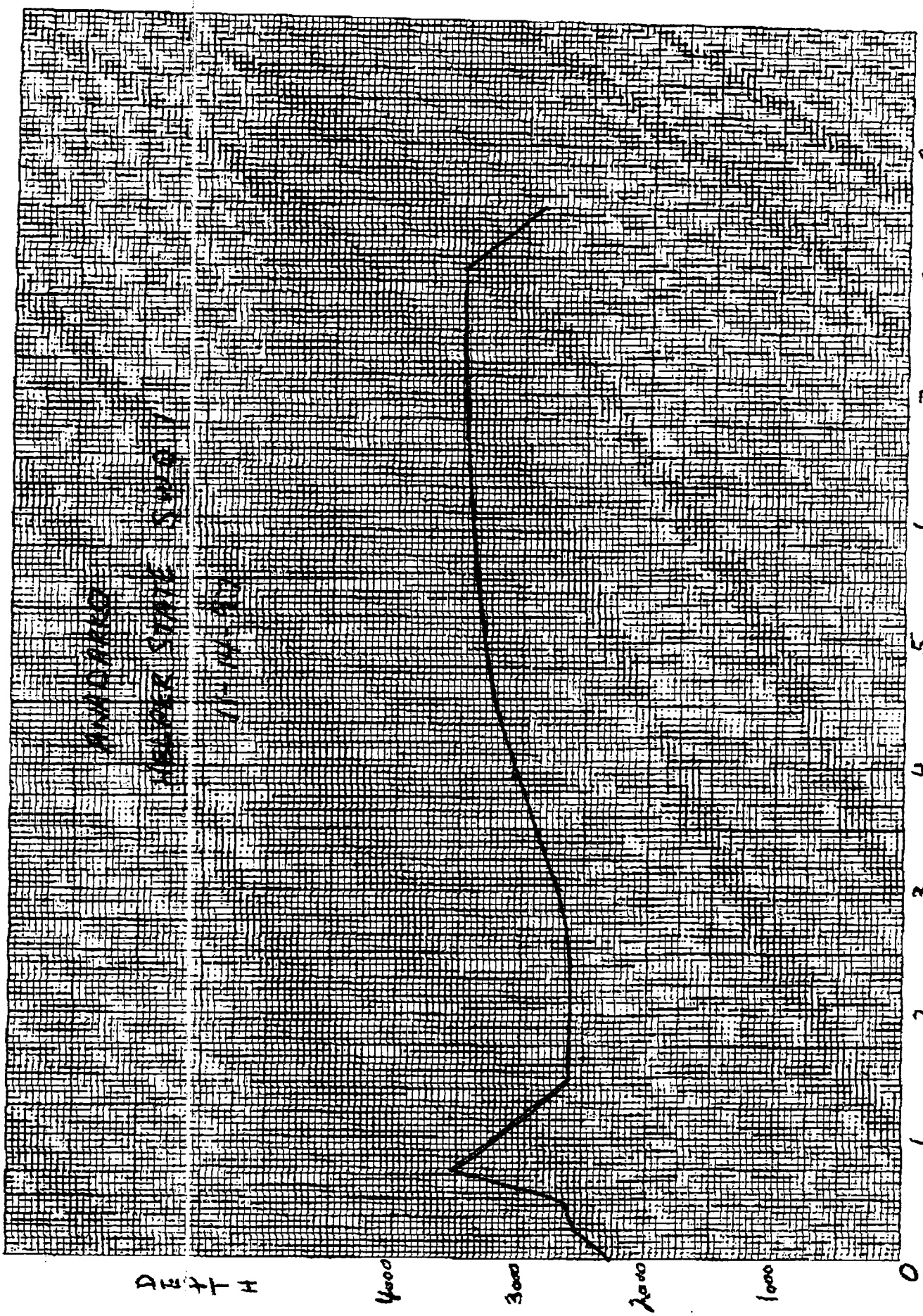

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DELSCO NORTHWEST

0-6000 PSI 12 HR CLOCK

Depth Feet	Pressure lbs. sq. in.	Time Interval From Test Start at (in hours)
6350	2287	OK BTM. 9:25 AM. 11-14-97
	2624	5 MIN.
	3412	10
	2576	15
	2761	20
	2660	25
	2660	30
	4152	35
	3573	40
	3561	45
	3543	50
	3558	55
	3212	60 1HR.
	2770	10
	2678	20
	2624	30
	2591	40
	2606	50
	2606	60 2HR
	2606	10
	2627	20
	2633	30
	2633	40
	2690	50
	2693	60 3HR
	2725	10
	2866	20
	2884	30
	2899	40
	3006	50
	3048	60 4HR.
	3060	10
	3155	20
	3191	30

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DELSCO NORTHWEST ~~Page 2~~

Depth Feet	Pressure lbs. sq. in.	Time Interval From Test Start at (in hours)
6350	3215	40
	3260	50
	3281	60 5HR
	3296	10
	3349	20
	3358	30
	3373	46
	3406	50
	3418	60 6HR.
	3421	10
	3448	20
	3460	30
	3463	40
	3478	50
	3478	60 7HR.
	3478	10
	3487	20
	3487	30
	3487	40
	3490	50
	3490	60 8HR
	3490	10
	3045	20
	2857	30
	2627	40

Page 1

DELSCO NORTHWEST

Sub-Surface Pressure Test

Field _____ County CARBON State UTAH

Company ANADARKO

Lease HELPER STATE Well No. SWD 1

Date 11-14-97 Time _____ Status of Well S.I

Pay _____ Perforations _____ Datum 6350

Depth Feet	Pressure lbs. sq. in.	Time Interval From Test Start At (in hours)	Gradient lbs./ft.	
			Casing Press	
			Tubing Press	
			Oil Level	
			Water Level	
			Hours—Shut In	Flowing
			Temp. N/A	At
			Elevation—D.F.	Ground
			Pressure This Test	
			Last Test Date	
			Press Last Test	
			B.H.P. Change	
			Loss/Day	
			Choke Size	
			Oil Bbls./day	
			Water Bbls./day	
			Total Bbls./day	
			Orifice and Line	
			Static and Differential	
			Gas Sp. Gr.	
			Cu. Ft./day	
			GOR	

Instrument	Number	Calibration Date
AMERADA	0-6000 PSI	3-27-96

Calculations and Remarks

Operator on Job GEORGE L.

Test Calculated By GEORGE L.

Witnessed: Company _____

State _____

HALLIBURTON ENERGY SERVICES

ACQUIRE Version 2.18

CUSTOMER AND JOB INFORMATION

Customer	ANADARKO	Date	14-Nov-1997
Contractor	CO. WELL SERVICE	County	CARBON
Lease	HELPER STATE	Town	14 S
Location	PRICE	Section	3
Formation	NAVAJO	Range	10 E
Job Type	450	Permit No	
Country	USA	Well No	SWD#1
State	UT	Field Name	HELPER STATE

Customer Representative JEFF DUNCAN Halliburton Operator HAMNER Ticket No. 301314

STAGE DESCRIPTIONS

BREAKDOWN
INJECTION TEST
FLUSH

WELL CONFIGURATION INFORMATION

Packer Type RTTS Depth 5890 ft
Bottom Hole Temp. 90.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	5890	5890	4.89	5.50	2.44	2.88
2	5920	5920	4.89	5.50	0.00	0.00

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	5920	6320	4

REMARKS ABOUT JOB

ANADARKO HELPER STATE SWD #1 INJECTION TEST

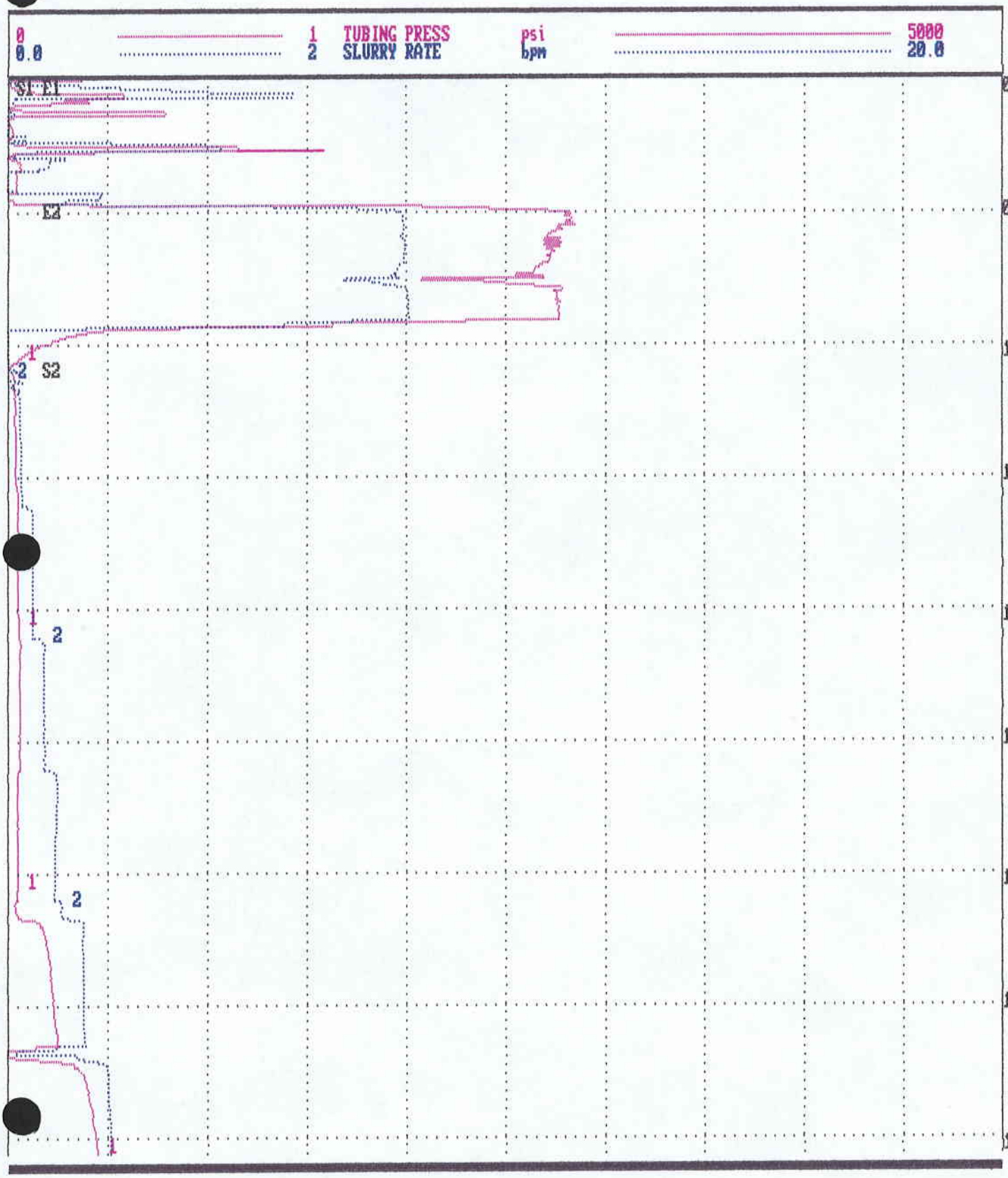
CO. WELL SERVICE

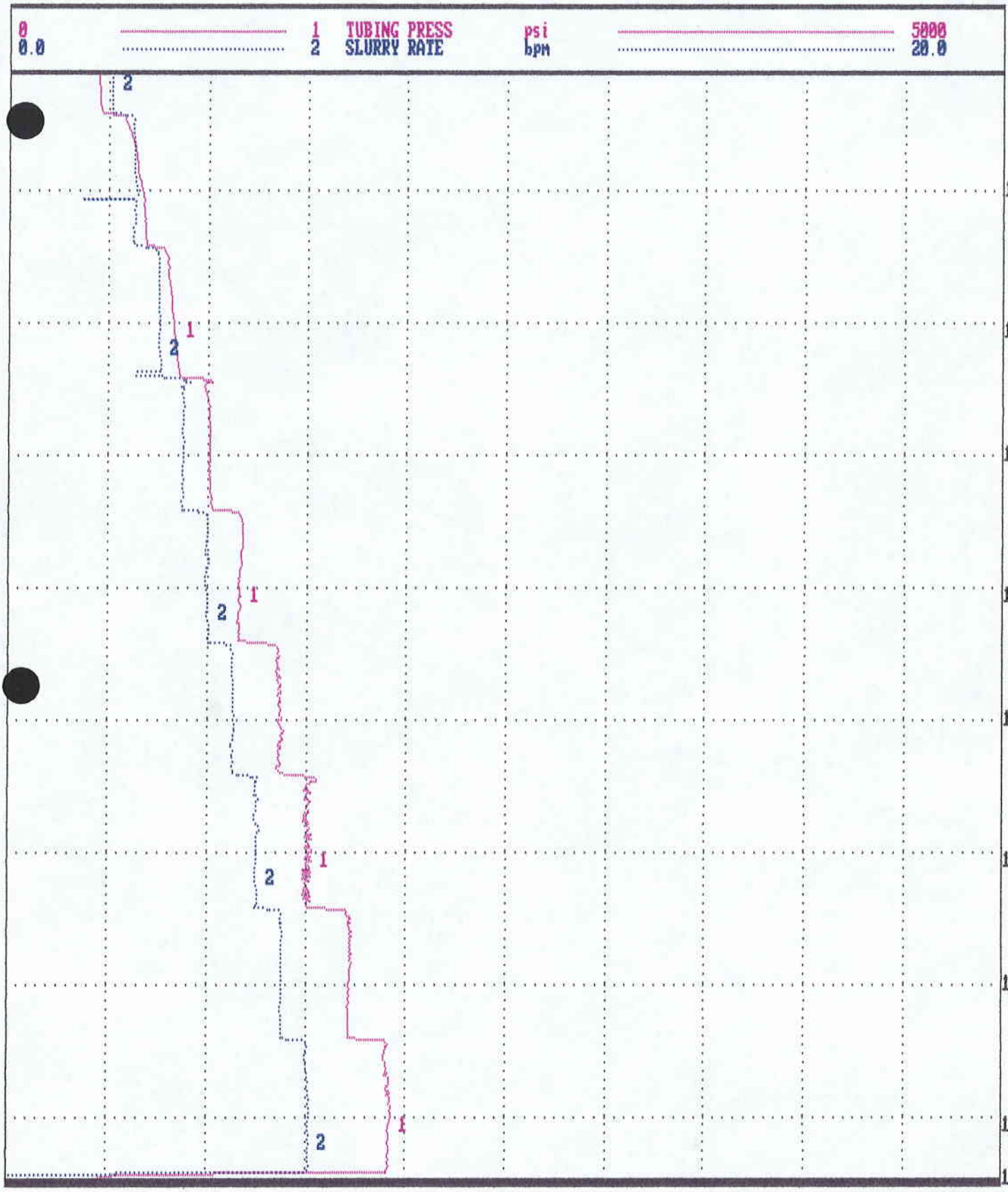
PERFS. 5920-6320 PACKER 5890

Customer: ANADARKO
Well Desc: HELPER STATE SWD#1
Formation: NAVAJO

Date: 14-Nov-1997
Ticket #: 301314
Job Type: 458

1. Tubing Press (psi)
Slurry Rate (bpm)




0
0.0
1 TUBING PRESS psi 5000
2 SLURRY RATE bpm 20.0
444
2.1
13:54:21
669
2.6
14:24:21
830
3.0
14:54:21
1009
3.5
15:24:21
1157
4.0
15:54:21
1360
4.5
16:24:21
1548
5.0
16:54:21
1719
5.5
17:24:21
1929
6.0
17:39:16

Customer: ANADARKO
Well Desc: HELPER STATE SWD#1
Formation: NAVAJO

Date: 14-Nov-1997
Ticket #: 301314
Job Type: 450

JOB SUMMARY

JOB START TIME: 09:24:21
JOB END TIME: 17:39:16
JOB DURATION: 08:14:55

STAGES AND EVENTS:

Chart		Time	Slurry Rate (bpm)	Slurry Stage Volume (bbl)	Tubing Press. (psi)	Remark
Event	#1	09:24:21	0.0	0.0	0	Start Job
Stage	#1	09:24:29	0.0	237.9	-1	Pump Water
Event	#2	09:52:11	0.8	0.0	44	Resume
Stage	#2	10:30:42	0.0	1207.5	20	Pump Water
Event	#3	17:39:42	0.0	0.0	20	5 Min Shutin Pres. Tubing Press 349 (psi)
Event	#4	17:47:03	0.0	0.0	20	10 Min Shutin Pres. Tubing Press 134 (psi)
Event	#5	17:52:01	0.0	0.0	20	15 Min Shutin Pres. Tubing Press 57 (psi)
Event	#6	17:52:12	0.0	0.0	20	End Job

Customer: ANADARKO
Well Desc: HELPER STATE SWD#1
Formation: NAVAJO

Date: 14-Nov-1997
Ticket #: 301314
Job Type: 450

STAGE SUMMARY

Stage Times

Stage	Start Time	End Time	Elapsed Time
1	09:24:29	10:30:42	01:06:13
2	10:30:42	17:52:12	07:21:30
Total	09:24:29	17:52:12	08:27:43

AVERAGES OR VOLUMES PER STAGE -- Planned Volume vs. Actual Volume

Stage	Planned Sl Volume (bbl)	Slurry Volume (bbl)
1	238.0	237.9
2	1200.0	1207.5
Tot/Avg	1438.0	1445.5

AVERAGES OR VOLUMES PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)
1	1197	4.5
2	773	2.8
Tot/Avg	831	3.1

MAXIMUM VALUE PER STAGE -- Strip Chart Variables

Stage	Tubing Pressure (psi)	Slurry Rate (bpm)
1	3201	20.4
2	1941	6.1
Max Job	3201	20.4

HALLIBURTON

JOB LOG

TICKET #	TICKET DATE
301314	11/14/97

REGION	NWA / COUNTRY	BDA / STATE	COUNTY
NORTH AMERICA	ROCKY MOUNTAIN	DENVER / UT	CARBON

MBU ID / EMPL #	H.E.S EMPLOYEE NAME	PSL DEPARTMENT
VE0501/ F4544	JIM HAMNER	PRODUCTION INHANCMENT

LOCATION	COMPANY	CUSTOMER REP / PHONE
RNAL	ANADARKO	JEFF DUNCAN

TICKET AMOUNT	WELL TYPE	API/UWI #
	01 / OIL	

WELL LOCATION	DEPARTMENT	JOB PURPOSE CODE
PRICE	5005	450

LEASE / WELL #	SEC / TWP / RNG
HELPER STATE SWD #1	3/14S/10E

H.E.S. EMP NAME / EMP # / (EXPOSURE HOURS)	HRS	HRS
JIM HAMNER/F4544	13	
STEVE WINN/G3588	13	
DAVID WEEKS/J2331	13	

Chart No.	Time	Rate (BPM)	Volume (BBL)(GAL)	Pmps T	Pmps C	Press.(PSI) Tbg	Press.(PSI) Csg	Job Description / Remarks
	0130							CALLED OUT
	0600							ON LOCATION
	0730							RIGGED UP
	0745							SAFETY MEETING
	0830							PRIME&TEST
	0830					5,121		WAITING ON WIRELINE
	0926							START TEST&BREAK
	0928		4			250		STOP TO FIX LEAK ON WELL HEAD
	0950		4			263		START PUMPING
	0954	7.9	36			2,860		RATE&PRESS
	0958	8.0	63			2,826		RATE&PRESS
	1004	8.0	112			2,664		RATE&PRESS
	1016	8.0	205			2,746		RATE&PRESS
	1020		238			750		ISIP
	1025					146		5MIN
	1030					12		10MIN
	1031							START.25 BBL MIN RATE TEST
	1035	0.3	1			36		RATE&PRESS
	1041	0.3	2			36		RATE&PRESS
	1051	0.3	5			41		RATE&PRESS
	1101	0.3	7			49		END.25 RATE
	1101	0.5	7			50		START.50 BBL MIN RATE TEST
	1111	0.5	13			51		RATE&PRESS
	1121	0.5	17			54		RATE&PRESS
	1131	0.5	23			55		END.50 RATE
	1131	0.8	23			60		START.75 BBL MIN RATE TEST
	1141	0.8	30			62		RATE&PRESS
	1151	0.8	37			61		RATE&PRESS
	1201	0.8	45			50		END.75 RATE
	1201	1.0	45			50		START1 BBL MIN RATE TEST
	1211	1.0	56			51		RATE&PRESS
	1221	1.0	64			50		RATE&PRESS
	1231	1.0	74			52		END1 RATE
	1231	1.5	74			153		START1.5 BBL MIN RATE TEST

HALLIBURTON

JOB LOG

TICKET # 301314	TICKET DATE 11/14/97		
REGION NORTH AMERICA	NWA / COUNTRY ROCKY MOUNTAIN	BDA / STATE DENVER / UT	COUNTY CARBON
MBU ID / EMPL # VE0501/ F4544	H.E.S EMPLOYEE NAME JIM HAMNER	PSL DEPARTMENT PRODUCTION INHANCMENT	
[redacted]RNAL	COMPANY ANADARKO	CUSTOMER REP / PHONE JEFF DUNCAN	
[redacted]ET AMOUNT	WELL TYPE 01 / OIL	API/UWI #	
WELL LOCATION PRICE	DEPARTMENT 5005	JOB PURPOSE CODE 450	
LEASE / WELL # HELPER STATE SWD #1	SEC / TWP / RNG 3/14S/10E		

H.E.S. EMP NAME / EMP # / (EXPOSURE HOURS)	HRS	HRS
JIM HAMNER/F4544	13	
STEVE WINN/G3588	13	
DAVID WEEKS/J2331	13	

Chart No.	Time	Rate (BPM)	Volume (BBL)(GAL)	Pmps T	Pmps C	Press.(PSI) Tbg	Press.(PSI) Csg	Job Description / Remarks
	1241	1.5	87			202		RATE&PRESS
	1251	1.5	102			228		RATE&PRESS
	1301	1.5	117			238		END1.5 RATE
	1301							STOP TO FIX LEAK ON WELL HEAD
	1307		117					START2 BBL MIN RATE TEST
	1317	2.0	145			412		RATE&PRESS
	1327	2.0	165			449		RATE&PRESS
	1337	2.0	185			453		END2 RATE
	1337	2.5	185			580		START2.5 BBL MIN RATE TEST
	1347	2.5	211			640		RATE&PRESS
	1357	2.5	236			674		RATE&PRESS
	1407	2.5	260			691		END2.5 RATE
	1407	3.0	260			786		START3 BBL MIN RATE TEST
	1417	3.0	290			810		RATE&PRESS
	1427	3.0	321			829		RATE&PRESS
	1437	3.0	349			862		END3 RATE
	1437	3.5	349			978		START3.5 BBL MIN RATE TEST
	1447	3.5	386			1,010		RATE&PRESS
	1457	3.5	421			1,004		RATE&PRESS
	1507	3.5	454			1,020		END3.5 RATE
	1507	4.0	454			1,167		START4 BBL MIN RATE TEST
	1517	4.0	496			1,176		RATE&PRESS
	1527	4.0	536			1,151		RATE&PRESS
	1537	4.0	574			1,182		END4 RATE
	1537	4.5	574			1,358		START4.5 BBL MIN RATE TEST
	1547	4.5	621			1,357		RATE&PRESS
	1557	4.5	666			1,378		RATE&PRESS
	1607	4.5	709			1,387		END4.5 RATE
	1607	5.0	709			1,539		START5 BBL MIN RATE TEST
	1617	5.0	759			1,522		RATE&PRESS
	1627	5.0	810			1,474		RATE&PRESS
	1637	5.0	859			1,523		END5 RATE
	1637	5.5	859			1,706		START5.5 BBL MIN RATE TEST
	1647	5.5	916			1,732		RATE&PRESS

HALLIBURTON

JOB LOG

TICKET # 301314	TICKET DATE 11/14/97		
REGION NORTH AMERICA	NWA / COUNTRY ROCKY MOUNTAIN	BDA / STATE DENVER / UT	COUNTY CARBON
MBU ID / EMPL # VE0501/ F4544	H.E.S EMPLOYEE NAME JIM HAMNER	PSL DEPARTMENT PRODUCTION INHANCMENT	
LOCATION RNAL	COMPANY ANADARKO	CUSTOMER REP / PHONE JEFF DUNCAN	
TICKET AMOUNT	WELL TYPE 01 / OIL	API/UWI #	
WELL LOCATION PRICE	DEPARTMENT 5005	JOB PURPOSE CODE 450	
LEASE / WELL # HELPER STATE SWD #1	SEC / TWP / RNG 3/14S/10E		

H.E.S. EMP NAME / EMP # / (EXPOSURE HOURS)	HRS	HRS
JIM HAMNER/F4544	13	
STEVE WINN/G3588	13	
DAVID WEEKS/J2331	13	

Chart No.	Time	Rate (BPM)	Volume (BBL)(GAL)	Pmps T	Pmps C	Press.(PSI) Tbg	Press.(PSI) Csg	Job Description / Remarks
	1657	5.5	972			1,718		RATE&PRESS
	1707	5.5	1,023			1,713		END5.5 RATE
	1707	6.0	1,023			1,905		START6 BBL MIN RATE TEST
	1717	6.0	1,086			1,910		RATE&PRESS
	1727	6.0	1,149			1,912		RATE&PRESS
	1737		1,208			681		END JOB
	1737					640		ISIP
	1742					252		5 MIN
	1747					134		10 MIN
	1752					57		15 MIN
								1446 BBL TOTAL WATER PUMPED

MONTGOMERY WATSON

November 24, 1997

Anadarko Petroleum Corporation
17001 Northchase Drive
P.O. Box 1330
Houston, TX 77251-1330

ATTN: Mr. Shad Frazier

Subject: Hydrogeologic Assessment in the Vicinity of Anadarko
Ferron Coalbed Methane Water-Disposal Well Helper State SWD # 1

Dear Mr. Frazier:

This letter-report is a summary of findings of an evaluation of general groundwater quality and hydrogeologic conditions in the vicinity of the Anadarko North Area Ferron Coalbed Methane project in Carbon County, Utah.

Project Background and Scope

It is our understanding that Anadarko has completed water-disposal well Helper State SWD #1 at 1,131' FSL, 2,194' FWL of Section 3, Township 14 South, Range 10 East, in Carbon County, Utah. The well was drilled to a depth of 6,488 feet, and is completed in the Navajo Sandstone and Wingate Sandstone. The well will be used to dispose of water removed from nearby existing and proposed coalbed methane production wells completed in the Ferron Sandstone at depths of approximately 2,100 feet.

The purpose of this report is to provide Anadarko with an independent evaluation of hydrogeologic conditions in the area of the disposal well, specifically those in the Navajo Sandstone Aquifer. The scope of our services included the collection and analysis of available information for permitted water-supply and oil and gas wells within a five-mile radius of the disposal well site, and review and interpretation of available geologic maps and reports for the area. Data sources included:

- Utah Department of Natural Resources Division of Water Rights database, files, and reports
- Utah Department of Natural Resources Division of Water Resources reports
- Utah Division of Oil, Gas and Mining (UDOGM) files
- Utah Geological Survey reports and maps
- U.S. Geological Survey (USGS) database, reports, and maps

4525 South Wasatch Blvd.
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Salt Lake City, Utah
84124-4799

Tel: 801 272 1900
Fax: 801 272 0430

Geology of the Navajo Sandstone

The Lower Jurassic Navajo Sandstone is a light-brown to light-gray, thick-bedded to massive, cross-bedded quartzose sandstone. The Navajo is generally fine-grained, clean and friable. The formation contains a few thin lenticular, light-gray limestone beds in the upper part (Witkind, 1995). Navajo exposures range from steep cliffs to rounded knolls and nearly flat terrain. The Navajo Sandstone ranges in thickness from 400 to 1,000 feet along the west flank of the San Rafael Swell, and is projected to be approximately 300 feet thick in the vicinity of Helper State SWD #1 (Hood and Patterson, 1984, Plate 6; attached Figure 1). In the vicinity of Helper, the Navajo Sandstone strikes generally northeast and dips from 3 to 7 degrees west (Witkind, 1988).

Groundwater Occurrence

Groundwater in the area north of the San Rafael Swell occurs under confined, unconfined, and perched conditions. Most water in the unconsolidated surficial deposits is unconfined and saline, due to dissolution of evaporite minerals. Perched conditions occur in partially or fully-saturated strata underlain by less-permeable, unsaturated rocks. Water in consolidated strata such as the Navajo Sandstone is unconfined in and near outcrops around the perimeter of the Swell, where recharge to the aquifer occurs (see attached Figure 2). Downgradient and downdip from the recharge areas, the water level in the confined aquifer intersects the contact with an overlying confining layer, and groundwater is under confined conditions. In the San Rafael Swell, the Carmel Formation serves as the confining layer above the Navajo Sandstone.

Groundwater Movement

According to information extrapolated from Hood and Patterson (1984, Plate 5) the potentiometric surface of groundwater in the Navajo Sandstone is approximately 5,100 feet above mean sea level (about 900 feet below ground level) in the vicinity of Helper State SWD #1 (see Figure 2). Groundwater in the Navajo Sandstone is recharged by infiltration into exposures of the formation around the flanks of the San Rafael Swell. Recharge along the west flank flows downdip (westerly) toward Castle Valley (Figure 2). Approximately 20 miles south of Castle Dale, the west-flank groundwater flow in the Navajo splits into north and south components (Hood and Patterson, 1984, Plate 5; Weiss, 1987, Figure 7). The direction of groundwater movement in the Navajo north of the groundwater divide (in the area of Castle Dale) is north-northeast; in the area of Price and Helper groundwater flows east-northeast. Groundwater flow in the Navajo continues clockwise around the north end of the San Rafael Swell, and generally southwest along the east flank of the Swell, until it intercepts and discharges to the Green River.

Based on analysis of shallow (less than 5 feet in depth) bedrock cores and outcrop samples, the porosity of the Navajo Sandstone in the northern San Rafael Swell area ranges

from 3.6 to 26.8 percent (averaging 17.7 percent), and hydraulic conductivities range from 0.0037 to 5.1 feet per day (Hood and Patterson, 1984). As extrapolated from Hood and Patterson's potentiometric contour map (1984, Plate 5; attached Figure 2), the hydraulic gradient of groundwater in the Navajo near Helper is easterly, at 0.0013.

The horizontal rate of groundwater flow (or average linear velocity) can be calculated using a modified form of the Darcy Equation (Freeze and Cherry, 1979):

$v = (K/n)\ (dh/dl)$

where:

v	=	average linear velocity (feet per day)
K	=	hydraulic conductivity (feet per day)
n	=	porosity (fraction)
dh/dl	=	hydraulic gradient (feet/foot)

Using the published range of values for K and n and the calculated dh/dl discussed above, the calculated average linear velocity of groundwater in the Navajo Sandstone in the northern San Rafael area may range from 0.007 feet per year (under low conductivity, high porosity conditions) to 67 feet per year (under high conductivity, low porosity conditions). Note that these velocities are not based on site-specific data, but are calculated using hydraulic characteristics of near-surface, weathered samples. It is probable that the velocity of groundwater flow in the formation as a whole, and particularly in the unweathered formation at depth, is more in line with the lower velocity.

Near Caineville (approximately 95 miles due south of Helper), cores of Navajo Sandstone from 1,000 to 2,000 feet below ground surface had an average horizontal hydraulic conductivity (K) of 0.5 feet per day (Hood and Danielson, 1979, pg. 36). Assuming that the K value of these cores is more representative of the hydraulic conductivity of the Navajo at depth in the Castle Dale area, and assuming the 17.7 percent average porosity and 0.0013 hydraulic gradient extrapolated from Hood and Patterson (1984), an average linear velocity of 1.34 feet per year is derived.

Groundwater Use

Deep-source groundwater use in Carbon County is very limited. A review of recorded water rights for the 120 sections within an approximate 5-mile radius of Helper State SWD #1 revealed a total of 675 water rights. Of these, 633 are surface rights on creeks and springs, and 42 are underground water rights for wells. Of the 42 underground water rights, only 10 have Well Driller Reports on file with the Utah Division of Water Rights. Nine of these wells are less than 200 feet deep; the remaining well was drilled by Mountain Fuel Supply to 958 feet and produced brackish water. According to the Utah Division of

Water Rights regional engineer, no water is currently withdrawn from the Navajo Sandstone in Carbon County, and communities rely on surface water and spring flow collected from the Price River and the Wasatch Plateau.

Five test wells were installed in 1981 by Utah Power and Light (UP&L) in Section 1, Township 20 South, Range 9 East and Section 7, Township 20 South, Range 10 East (35 miles south of Helper State SWD #1, see Figure 2). The wells were drilled to the top of the Kayenta Formation and completed in the Navajo at depths ranging from 575 to 882 feet. Navajo thickness ranged from 340 to 404 feet. Although the wells produced water of sufficient quality and quantity for use in UP&L's power plant near Castle Dale, the cost of a conveyance pipeline was determined to be prohibitive, and adequate surface water supplies were available. The wells were donated by UP&L to the Utah Division of Wildlife Resources.

Groundwater Quality

In general, groundwater is saline in much of the northern San Rafael Swell area. Most formations in the Swell contain fresh water only near the recharge areas. Fresh water occurs in the Navajo Sandstone near outcrop areas on the perimeter of the Swell where infiltration of meteoric water flushes out dissolved solids. In most other areas of the northern San Rafael Swell, with increasing distance from recharge areas, water in the Navajo shows degradation by interformational leakage and mixing with saline water from adjacent formations (e.g., the overlying Carmel Formation) which contain gypsum, halite, and other evaporite minerals (Hood and Patterson, 1984).

Water samples collected by UP&L from the Navajo at various depths in the above-mentioned wells were submitted for laboratory analyses of water quality. The analytical results indicate total dissolved solids (TDS) concentrations from 600 to 6,799 milligrams per liter (mg/l). These wells are only 1.5 miles downdip from numerous narrow canyon-bottom exposures of the Navajo, and only 3 miles downdip of broad Navajo exposures with little relief. The relative "freshness" of some of the samples of Navajo groundwater from the UP&L wells is a function of shallow depth and the proximity of the wells to this recharge area.

The salinity of groundwater typically increases with depth of burial and distance from the area of recharge (Freeze and Cherry, 1979, pg. 241-243). This degradation in quality is primarily related to the distance the groundwater has traveled (allowing more time for dissolution of minerals in the formation). Because of this, it is reasonable to expect that water quality in the Navajo Sandstone degrades westward and northward with increasing depth and distance from the outcrop; the Navajo at Helper State SWD #1 is under 6,000 feet of cover and is more than 30 miles downgradient from the nearest recharge area.

According to information on file with the Utah Division of Oil, Gas and Mining, the TDS concentration of groundwater collected from the Navajo Sandstone at the River Gas Corporation Drunkard's Wash injection well D-1 (immediately southwest of Price, Utah) was analyzed at 172,386 milligrams per liter (parts per million [ppm]), which is an extremely saline brine. The Navajo Sandstone at well D-1 is under approximately 5,700 feet of cover, and is about 28 miles north-northwest of the nearest outcrop (recharge area) of the Navajo in the San Rafael Swell. The TDS concentration of water removed from the Ferron Sandstone coal beds at Drunkard's Wash and injected in the Navajo Sandstone at well D-1 is approximately 15,000 ppm; thus, injection of Ferron water actually decreases the salinity of groundwater in the Navajo.

Helper State SWD #1 is perforated across three depth intervals: from 5,920 feet to 6,090 feet and from 6,112 to 6,154 feet (in the Navajo Sandstone); and from 6,256 to 6,320 feet (in the Wingate Sandstone). For the purposes of this report, groundwater in the Wingate Sandstone is not differentiated from that in the Navajo Sandstone Aquifer (i.e., both formations and the interposed Kayenta Formation are considered a single hydrogeologic unit). Groundwater collected from these three zones between November 7 and 12, 1997 contained TDS concentrations of 64,997 ppm, 86,022 ppm, and 107,809 ppm, respectively. A composite sample of water from Anadarko's Ferron Sandstone production wells collected on November 12, 1997 had a TDS concentration of 25,500 ppm. As compared with conditions at Drunkard's Wash, the Navajo groundwater is less saline and the Ferron groundwater is more saline in the vicinity of the Anadarko wells. As at Drunkard's Wash, however, because the Ferron groundwater is more "fresh" than the Navajo groundwater, injection of the produced Ferron water in Helper State SWD #1 will decrease the salinity of water in the Navajo.

Potential Effects of Water-Disposal on Water Quality in the Navajo Aquifer

The effect of Ferron Sandstone groundwater disposal on water quality in the Navajo Sandstone Aquifer in the vicinity of Helper State SWD #1 will depend primarily on the quality of water removed from the Ferron during dewatering and gas production, and the quality of groundwater in the Navajo prior to injection of the Ferron water. Analyses of the Ferron and Navajo groundwaters suggest that injection of saline water from the Ferron may actually improve groundwater quality in the Navajo.

Hood and Patterson (1984, pg. 40) note that the relatively low transmissivity of the Navajo Sandstone results in a restricted cone of depression and steep drawdown under pumping. Because groundwater injection and groundwater withdrawal in confined aquifers have equivalent but inverse effects on the potentiometric surface surrounding the injection or withdrawal point (Freeze and Cherry, 1979, pg. 454), it is reasonable to expect that injection will result in a high, but relatively restricted groundwater mound in the Navajo Sandstone. Considering the upgradient distance to fresher, more usable water in the Navajo (closer to the formation's recharge area 30 miles southeast of Helper State SWD

#1), it is unlikely that injection of Ferron groundwater could adversely affect groundwater quality in the vicinity of future potential water-production sites.

It has been a pleasure to work with you on this project. If you have any questions or require additional information or services, please do not hesitate to call me at (801) 273-2416.

Sincerely,

MONTGOMERY WATSON

John D. Garr, R.G.
Supervising Hydrogeologist

Attachments: Figure 1
Figure 2

REFERENCES CITED

Freeze, R.A., and Cherry, J.A., 1979. Groundwater: Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 p.

Hood, J.W., and Danielson, T.W., 1979. Aquifer tests of the Navajo Sandstone near Caineville, Wayne County, Utah: State of Utah Department of Natural Resources Division of Water Rights Technical Publication No. 66, 69 p.

Hood, J.W., and Patterson, D.J., 1984. Bedrock aquifers in the northern San Rafael Swell area, Utah, with special emphasis on the Navajo Sandstone: State of Utah Department of Natural Resources Division of Water Rights Technical Publication No. 78, 128 p. text, 5 plates.

Weiss, E., 1987. Groundwater flow in the Navajo Sandstone in parts of Carbon, Grand, Carbon, Wayne, Garfield, and Kane counties, southeast Utah: U.S. Geological Survey Water-Resources Investigations Report 86-4012, 41 p.

Witkind, I.J., 1988. Geologic map of the Huntington 30' x 60' quadrangle, Carbon, Carbon, Grand, and Uintah Counties, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-1764. 1:100,000-scale.

Witkind, I. J., 1995. Geologic map of the Price 1_ x 2_ quadrangle, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-2462. 1:250,000-scale.

Anadarko Petroleum Corporation

Helper SWD Well Presentation

Helper SWD Well 1

Proposed Perforations

LOG CURVES

- 0 — 150 — GR (GAPI) 11 Gamma Ray
- 0 — 16 — HCAL (IN) 6 HILT Caliper
- 0.2 — 2,000 — AT10 (OHMM) 27 2Ft Vert. Res. 10in D.I.
- 0.2 — 2,000 — AT30 (OHMM) 29 2Ft Vert. Res. 30in D.I.
- 0.2 — 2,000 — AT90 (OHMM) 31 2Ft Vert. Res. 90in D.I.
- 0.2 — 2,000 — HMNO (OHMM) 21 HILT Micro Normal
- 0.2 — 2,000 — HMIN (OHMM) 20 HILT Micro inverse
- 0.3 — -0.1 — PHIA Average Porosity CUTOFF = 0.15
- 0 — 20 — PEFZ 18 HILT Photoelectric Factor

TOPS AND MARKERS

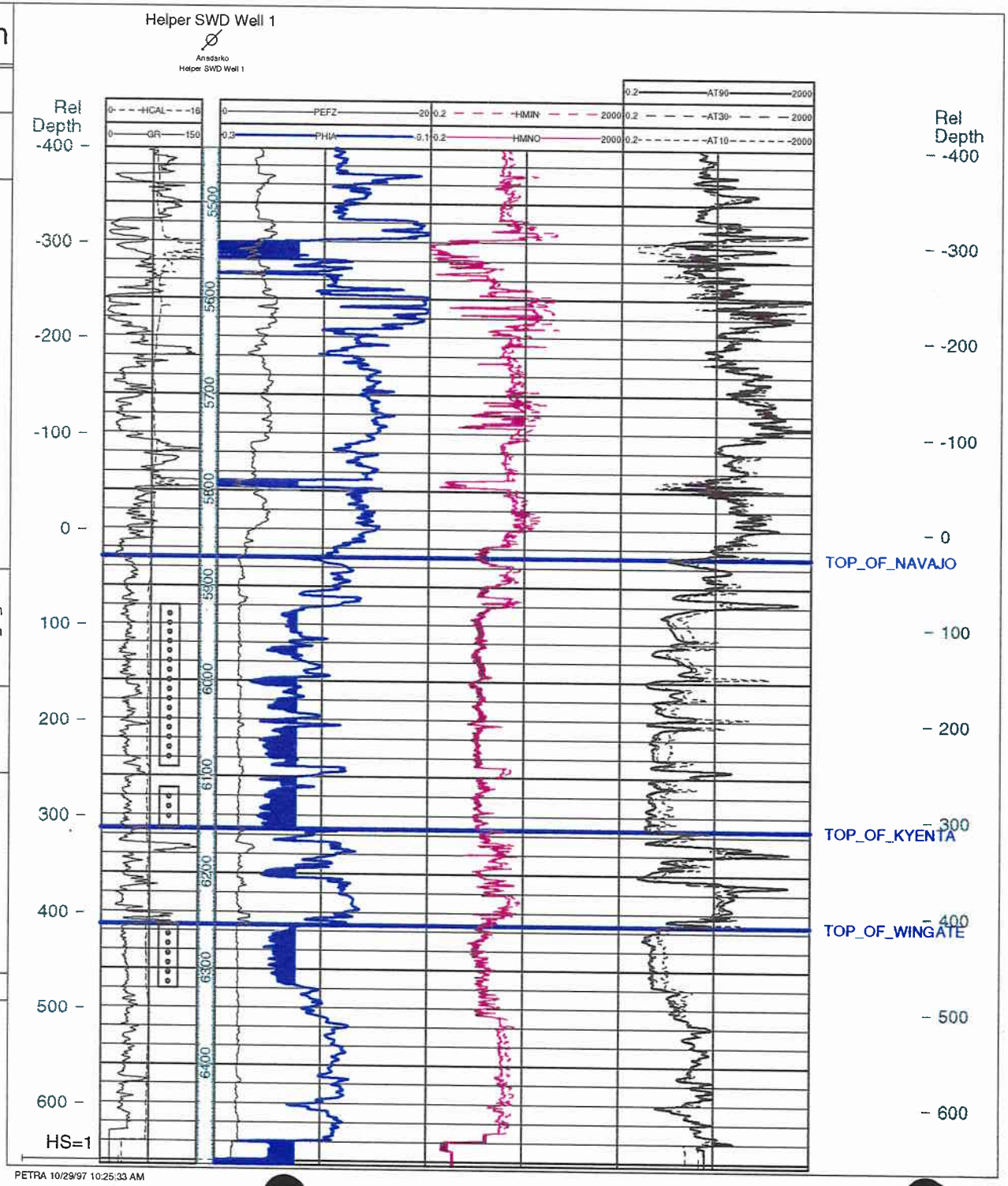
- TOP_OF_NAVAJO - Top Of Navajo Formation
- TOP_OF_KYENTA - Top Of Kyenta Formation

Operator
Well Name

CORES | PERFS | SHOWS | DST | IP | CASING

SDWL | ACTIVE | OPENHOLE | INACTIVE | BRIDGEPLUG | GAS | OIL | WATER | OTHER

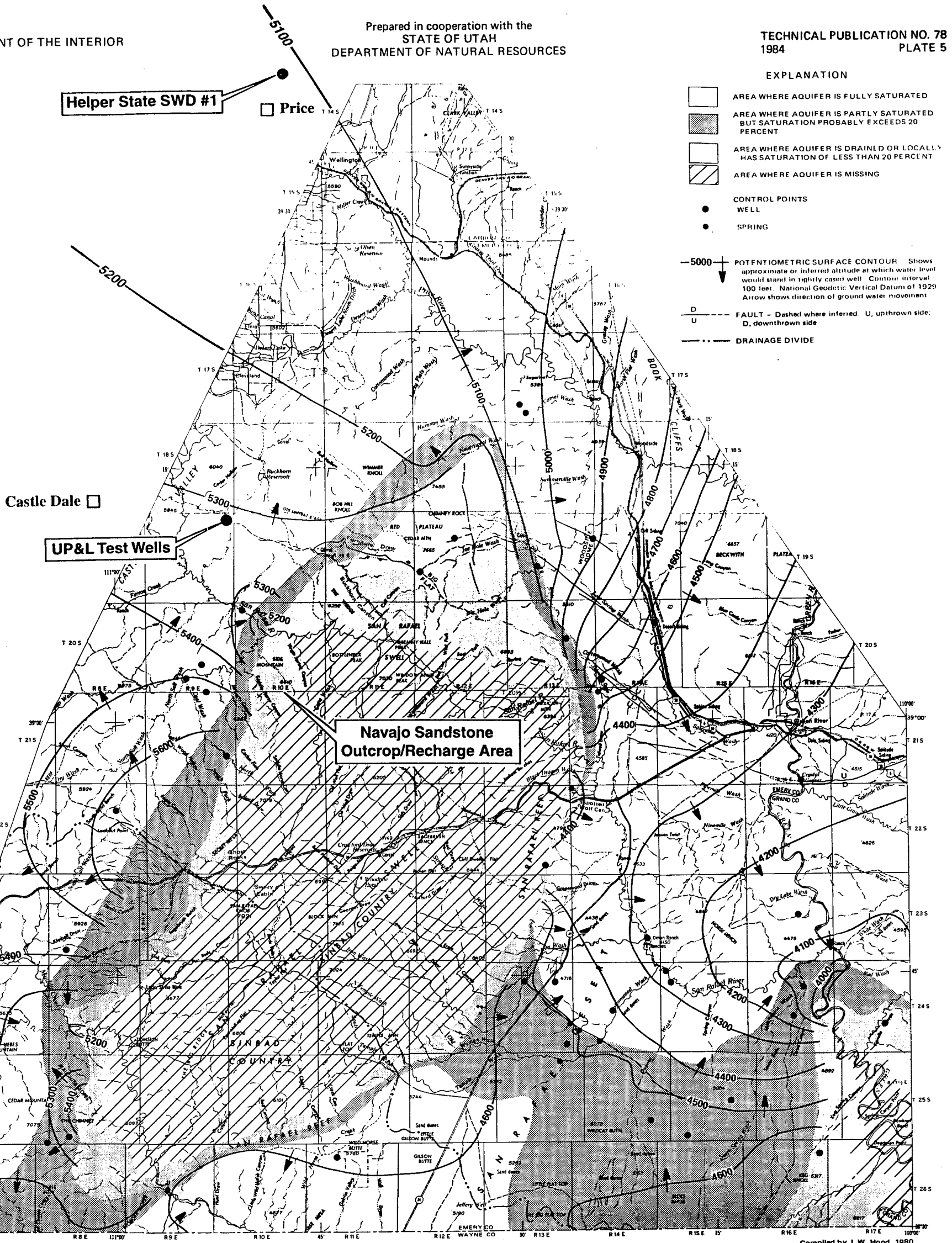
October 29,1997 10:25 AM



UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the
STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES

TECHNICAL PUBLICATION NO. 78
1984 PLATE 5



Base from U. S. Geological Survey 1:250,000 quadrangles, Price Utah, 1970, and Salina, Utah, 1970

Compiled by J. W. Hood, 1980

SCALE 1:250 000

5 0 5 10 15 MILES

5 0 5 10 15 KILOMETERS

National Geodetic Vertical Datum of 1929

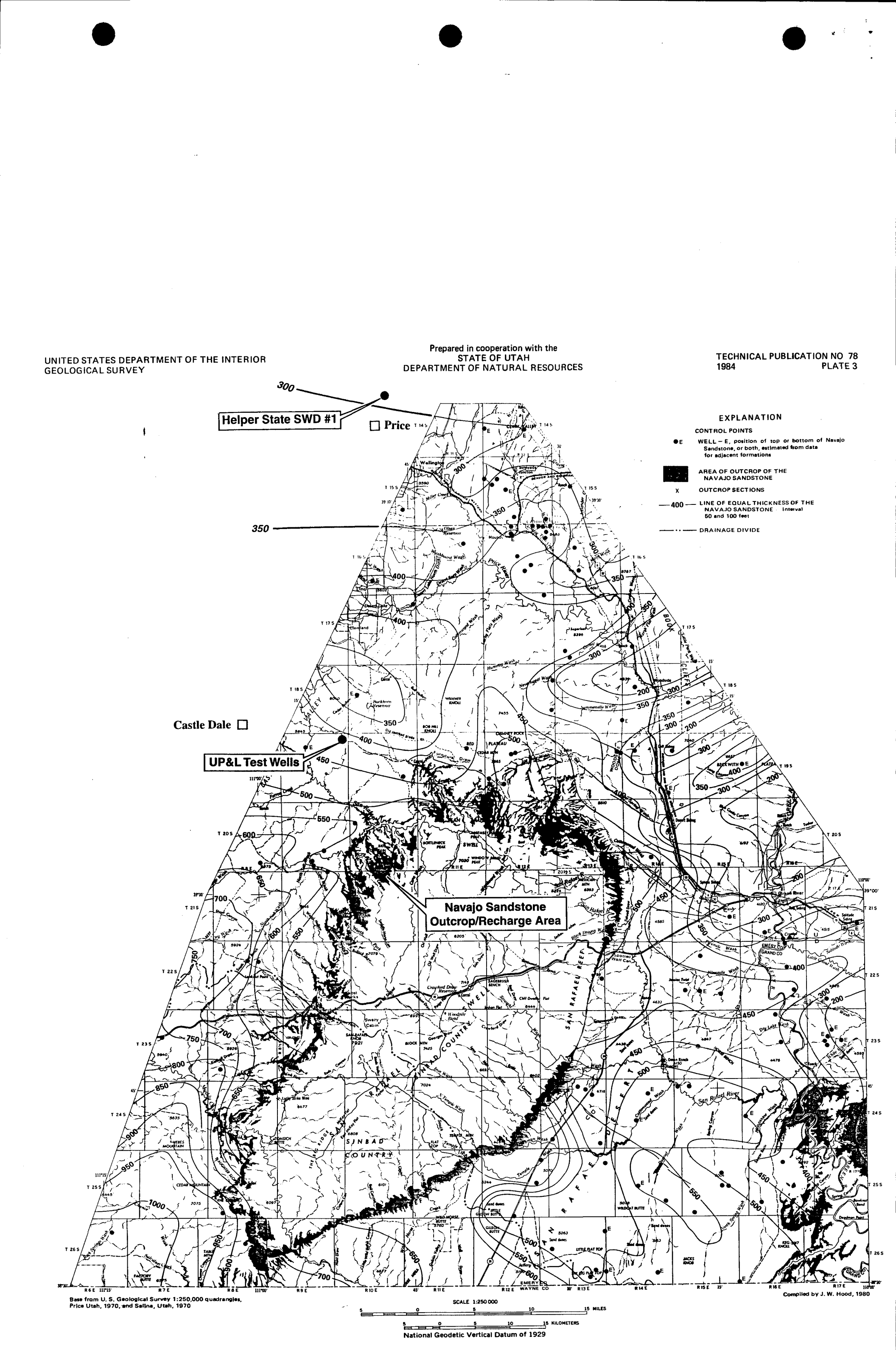
MAP SHOWING THE APPROXIMATE POTENTIOMETRIC SURFACE FOR THE NAVAJO SANDSTONE AQUIFER IN THE NORTHERN SAN RAFAEL SWELL AREA, UTAH.

FIGURE 2

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the
STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES

TECHNICAL PUBLICATION NO 78
1984 PLATE 3



Base from U. S. Geological Survey 1:250,000 quadrangles, Price Utah, 1970, and Salina, Utah, 1970

Compiled by J. W. Hood, 1980

National Geodetic Vertical Datum of 1929

MAP SHOWING THICKNESS OF THE NAVAJO SANDSTONE IN THE NORTHERN SAN RAFAEL SWELL AREA, UTAH.

FIGURE 1

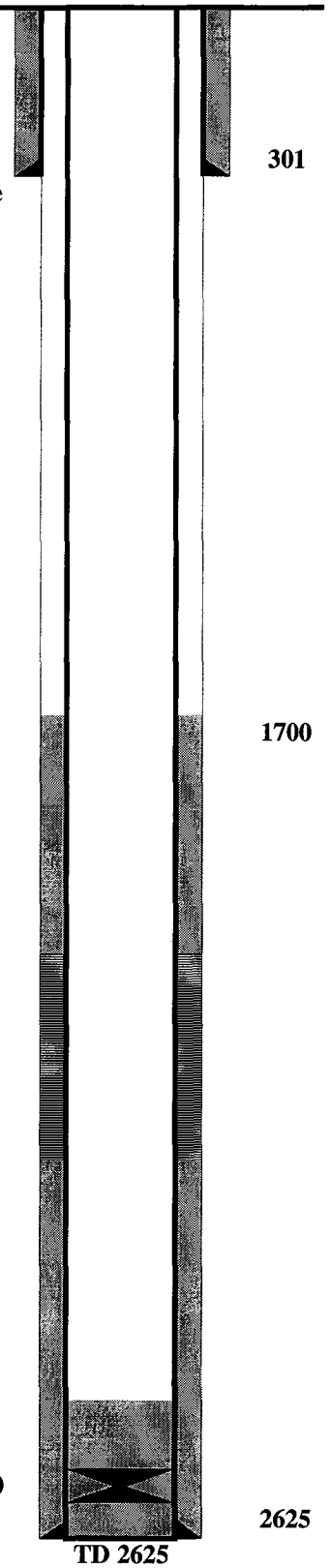
Helper State A-6

Sec. 3-14S-10E (2288' FSL & 820' FEL)

Carbon County Utah

	SPUD	RIG OFF
SURFACE	08/10/1997	08/13/1997
PRODUCTION	08/15/1997	

6006 GL 12 KB 6018



12-1/4" Hole
8-5/8" 24# J-55 — 301
TOC @ Surface
110 SXS CMT

TOC — 1700

7-7/8" Hole
5-1/2", 17# N-80
w/175 sxs cmt — 2625

TD 2625

FERRON COAL

(Holes)	Perforations
(12)	2148 - 2151
(24)	2164 - 2170
(40)	2207 - 2217
(16)	2225 - 2229
(20)	2232 - 2237
(112)	Total Holes

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN		
2-3/8"	JTS	
TA		
2-3/8"	JTS	
SN		
2-3/8"	JTS	
NC		
EOT		

ROD BREAKDOWN	
PONIES	
1"	
7/8"	
3/4"	
1"	
1.5"	
PUMP	

DEVIATION ANGLE	FORMATION	TOP

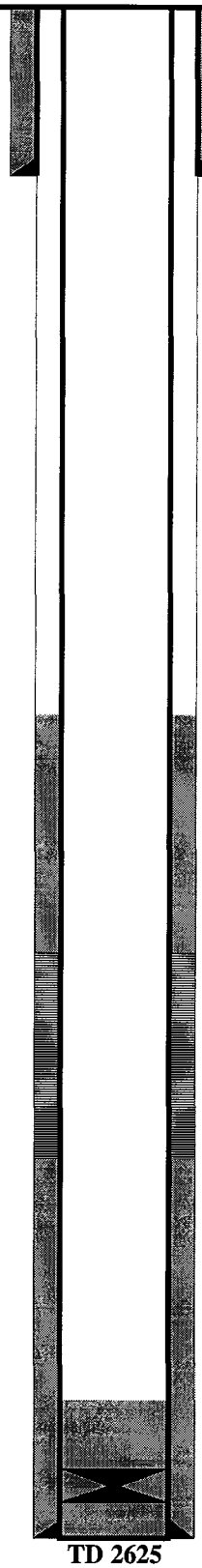
LAST REVISED: 11/10/1997

Helper State A-5

Sec. 3-14S-10E (1816' FSL & 2201' FWL)
API # 43-077-30363
Carbon County Utah

	SPUD	RIG OFF
SURFACE	08/10/1997	08/13/1997
PRODUCTION	08/15/1997	

5994 GL 12 KB 6006



12-1/4" Hole
8-5/8" 24# J-55 — 311
TOC @ Surface
110 SXS CMT

TOC — 1600

7-7/8" Hole
5-1/2", 17# N-80 — 2625
w/175 sxs cmt
TD 2625

FERRON COAL

(Holes)	Perforations
(16)	2132 - 2136
(32)	2162 - 2170
(12)	2212 - 2215
(16)	2236 - 2240
(28)	2261 - 2268
(104)	Total Holes

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN		
2-3/8"	JTS	
TA		
2-3/8"	JTS	
SN		
2-3/8"	JTS	
NC		
EOT		

ROD BREAKDOWN	
PONIES	
1"	
7/8"	
3/4"	
1"	
1.5"	
PUMP	

DEVIATION ANGLE	FORMATION	TOP

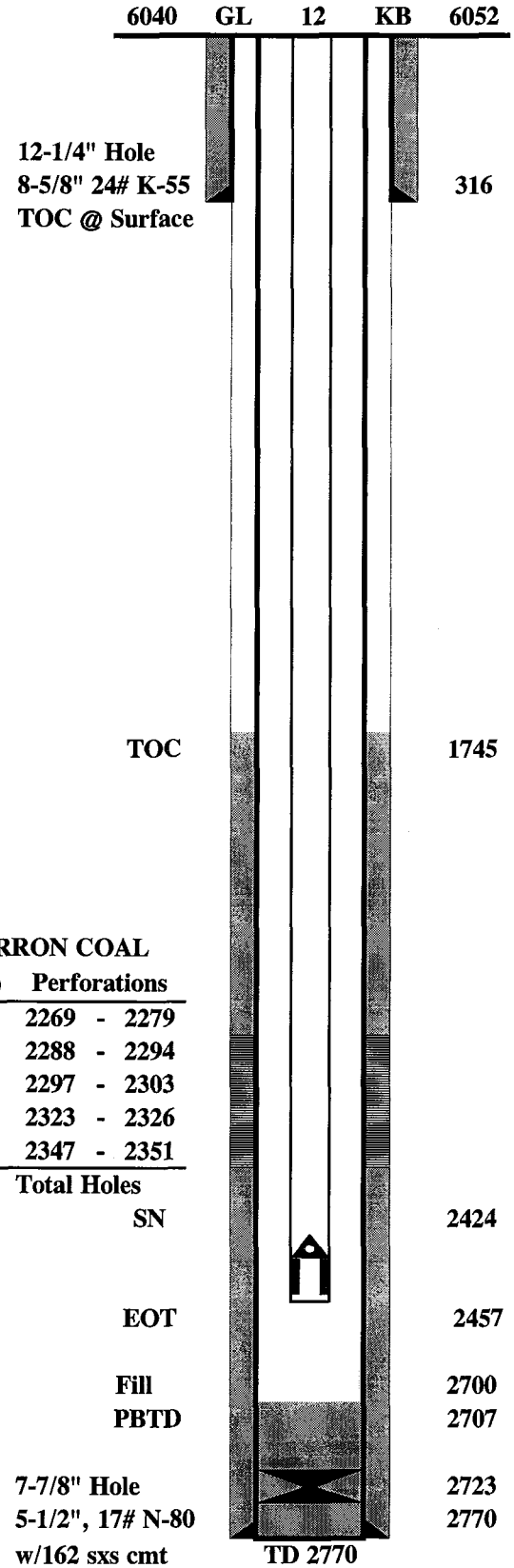
LAST REVISED: 11/10/1997

HELPER STATE A-1

W 1621' FNL & 2019' FWL: SEC 3-T14S-R10E

API NO. 43-007-30349

	SPUD	RIG OFF
SURFACE	04/24/1997	04/26/1997
PRODUCTION	05/05/1997	05/24/1997



WELL WORK HISTORY

05/09/1997	Perf Ferron w/ 3 3/8 16 gram charge
05/15/1997	Frac Ferron w/ 3000 gal 20# pre pad & 50500 gal 20# Delta Frac w/ 96800# 20/40 & 99800# 16/30
	ISIP 1856-1599-1560-1532
06/07/1997	Lower Tbg below Perfs put on Production
06/20/1997	Pump Change
08/01/1997	RE-PERF W/ BORIC FLUSH

NOTES: Marker JT @ 2086, Float Collar @ 2725

FERRON COAL

(Holes)	Perforations
(50)	2269 - 2279
(24)	2288 - 2294
(18)	2297 - 2303
(18)	2323 - 2326
(20)	2347 - 2351
(130)	Total Holes

TUBING BREAKDOWN

2-3/8"	77	
TA		JTS
2-3/8"	1	
SN	2424	JTS
2-3/8"	1	
NC	2456	JTS
EOT	2457	

ROD BREAKDOWN

PONIES	20'
1"	
7/8"	925'
3/4"	1250'
1"	
1.5"	200'
PUMP	2425
2"X1.5"X20' 80 ring, SL 166	

DEVIATION ANGLE	
1197	1.25
2557	1

FORMATION	TOP
FERRON SANDSTONE	2244
FERRON COAL	2272
TUNUNK SHALE	2426

LAST REVISED: 11/10/1997

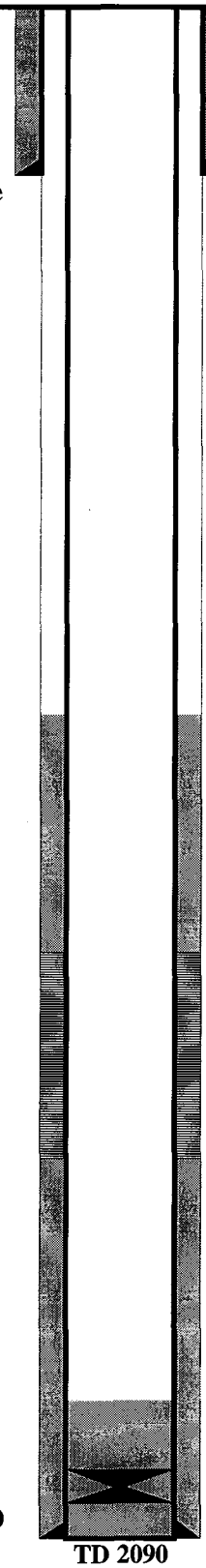
Helper State A-9

Sec. 10-14S-10E (1300' FNL & 1600' FWL)

	SPUD	RIG OFF
SURFACE	08/10/1997	08/13/1997
PRODUCTION	08/15/1997	

Carbon County Utah

5750 GL 12 KB 5762



12-1/4" Hole
8-5/8" 24# J-55 — 310
TOC @ Surface
110 SXS CMT

TOC — 700

FERRON COAL

(Holes)	Perforations
(20)	1609 - 1614
(32)	1630 - 1638
(16)	1646 - 1650
(16)	1680 - 1684
(84)	Total Holes

7-7/8" Hole
5-1/2", 17# N-80 — 2090
w/175 sxs cmt
TD 2090

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN		
2-3/8"	JTS	
TA		
2-3/8"	JTS	
SN		
2-3/8"	JTS	
NC		
EOT		

ROD BREAKDOWN	
PONIES	
1"	
7/8"	
3/4"	
1"	
1.5"	
PUMP	

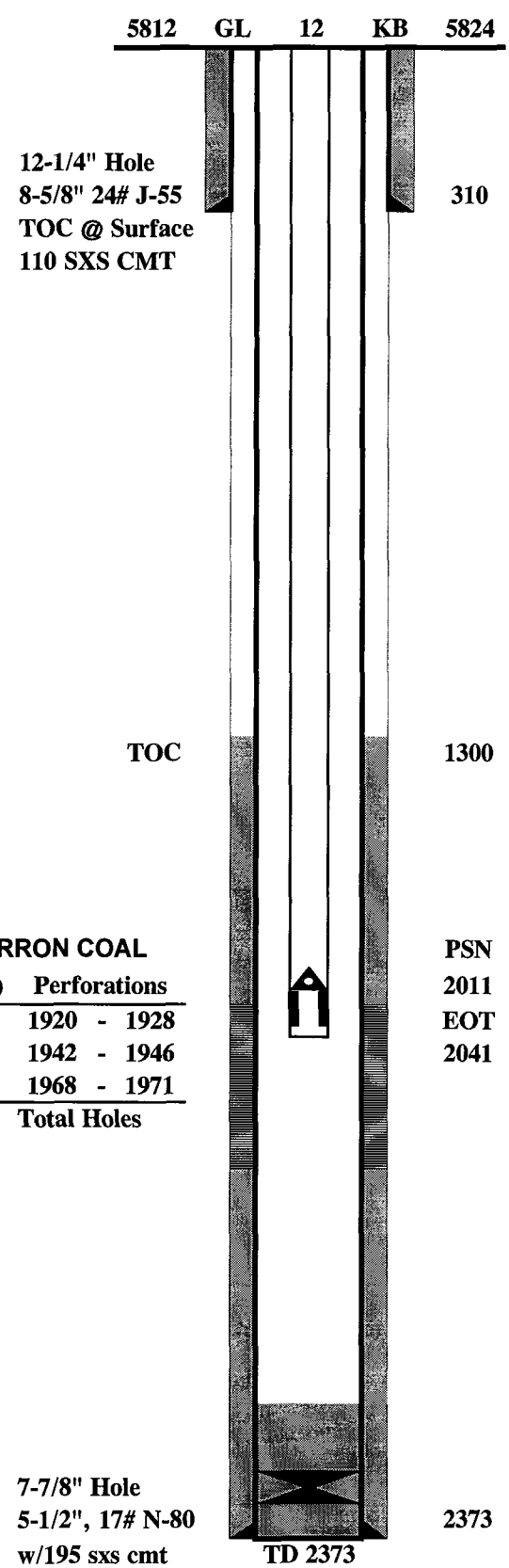
DEVIATION ANGLE	FORMATION	TOP
	FERRON SANDSTONE	
	FERRON COAL	
	TUNUNK SHALE	

LAST REVISED: 11/10/1997

HELPER STATE D-8

1059 FSL & 395' FEL Sec 5-T14S-R10E

	SPUD	RIG OFF
SURFACE	09/01/1997	09/03/1997
PRODUCTION	09/10/1997	



FERRON COAL

(Holes)	Perforations
(32)	1920 - 1928
(16)	1942 - 1946
(12)	1968 - 1971
(60)	Total Holes

WELL WORK HISTORY

09/11/1997 Frac 1920-1971 w/ 54694 gal+ 117,400# sand

NOTES:

TUBING BREAKDOWN		
2-3/8"	64	JTS
TA		
2-3/8"		JTS
PSN	2009	
2-3/8"	1	JTS
NC	2041	
EOT	2041	

ROD BREAKDOWN	
PONIES	40'
1"	
7/8"	
3/4"	2009'
1"	
1.5"	
PUMP	2011
2"X1 1/2"X16' 60 PA RINGS	

DEVIATION ANGLE		FORMATION	TOP
1371	3	FERRON SANDSTONE	
2333	5	FERRON COAL	
		TUNUNK SHALE	

LAST REVISED: 11/10/1997

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

December 9, 1997

Mr. John Baza
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1220
Salt Lake City, UT 84114

Reference: **Helper State SWD #1**
Section 3-T14S-R10E
Carbon County, Utah
DRL

Dear Mr. Baza:

Please find enclosed one set of radioactive and electric logs. These logs were inadvertently left out of the original package that was sent to you. If you could please combine these logs with our application it would be greatly appreciated.

Anadarko appreciates your consideration of our application. Should any problems arise with our application, please contact Shad Frazier at (281) 873-1227.

Sincerely,

Shad Frazier
Engineer

SF
Enclosure

River Gas Corporation
Helper State SWD #1 Well
Cause No. UIC-201

Publication Notices were sent to the following:

Anadarko Petroleum Corporation
17001 Northchase Drive
Houston, Texas 77060

Newspaper Agency Corporation
Legal Advertising
P.O. Box 45838
Salt Lake City, Utah 84145

Sun Advocate
P. O. Box 870
845 East Main
Price, Utah 84501-0870

Bureau of Land Management
Price Field Office
125 South 600 West
Price, Utah 84501

U.S. Environmental Protection Agency
Region VIII
Attn: Dan Jackson
999 18th Street
Denver, Colorado 80202-2466

School of Institutional Trust Lands Administration
Jim Cooper
675 East 500 South
Salt Lake City, Utah 84102

Carbon County Commissioners
120 East Main
Price, Utah 84501

Larraine Platt
Secretary
December 18, 1997

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

December 18, 1997

Sun Advocate
P. O. Box 870
845 East Main
Price, Utah 84501-0870

Re: Notice of Agency Action - Cause No. 201

Gentlemen:

Gentlemen:

Enclosed is a copy of the referenced Notice of Agency Action. Please publish the Notice, once only, as soon as possible. Please send proof of publication and billing to the Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, P.O. Box 145801, Salt Lake City, Utah 84114-5801.

Sincerely,

Larraine Platt

Larraine Platt
Secretary

Enclosure

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

State of Utah
DEPARTMENT OF NATURAL RESOURCES
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Salt Lake City, Utah 84114-5801
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December 18, 1997

Newspaper Agency Corporation
Legal Advertising
PO Box 45838
Salt Lake City, Utah 84145

Re: Notice of Agency Action - Cause No. UIC-201

Gentlemen:

Gentlemen:

Enclosed is a copy of the referenced Notice of Agency Action. Please publish the Notice, once only, as soon as possible. Please send proof of publication and billing to the Division of Oil, Gas and Mining, 1594 West North Temple, Suite 1210, P.O. Box 145801, Salt Lake City, Utah 84114-5801.

Sincerely,

Larraine Platt

Larraine Platt
Secretary

Enclosure

BEFORE THE DIVISION OF OIL, GAS AND MINING
DEPARTMENT OF NATURAL RESOURCES
STATE OF UTAH

---ooOoo---

IN THE MATTER OF THE APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR ADMINISTRATIVE APPROVAL OF THE HELPER STATE SWD #1 WELL LOCATED IN SECTION 3, TOWNSHIP 14 SOUTH, RANGE 10 EAST, S.L.M., CARBON COUNTY, UTAH, AS A CLASS II INJECTION WELL	:	NOTICE OF AGENCY ACTION CAUSE NO. UIC-201

---ooOoo---

THE STATE OF UTAH TO ALL PERSONS INTERESTED IN THE ABOVE ENTITLED MATTER.

Notice is hereby given that the Division of Oil, Gas and Mining (the "Division") is commencing an informal adjudicative proceeding to consider the application of Anadarko Petroleum Corporation for administrative approval of the Helper State SWD #1 well, located in Section 3, Township 14 South, Range 10 East, S.L.M., Carbon County, Utah, for conversion to a Class II injection well. The proceeding will be conducted in accordance with Utah Admin. R.649-10, Administrative Procedures.

The interval from 5920 feet to 6320 feet (Navajo and Wingate Formations) will be selectively perforated for water injection. The maximum injection pressure will be limited to 640 psig.

Any person desiring to object to the application or otherwise intervene in the proceeding, must file a written protest or notice of intervention with the Division within fifteen days following publication of this notice. If such a protest or notice of intervention is received, a hearing will be scheduled before the Board of Oil, Gas and Mining. Protestants and/or intervenors should be prepared to demonstrate at the hearing how this matter affects their interests.

Dated this 18th day of December 1997

STATE OF UTAH
DIVISION OF OIL, GAS & MINING

JOHN R. BAZA, ASSOCIATE DIRECTOR

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

December 18, 1997

Mr. Dan Jarvis
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1220
Salt Lake City, UT 84114

Reference: Helper State SWD #1
Section 3-T14S-R10E
Carbon County, Utah

Dear Mr. Jarvis:

Pursuant to our conversation this afternoon, enclosed is the additional information you requested concerning the Price-State #2 well. This well was drilled and abandoned in 1974 and is within the ½ mile radius of the referenced proposed disposal well.

Anadarko appreciates your assistance in this matter. If you need additional information or have any further questions, please advise.

Sincerely,

Tom Rushing
Staff Production Engineer

TRR/tsd
Enclosure

cc: SAF
MOB
TRC - Wellfile

H:\tsd001\tom\dogm - swd.doc

PF

August 1, 1974

MEMO FOR FILING

Re: WILLARD PEASE
Price-State #2
Sec. 3, T. 14 S, R. 10 E,
Carbon County, Utah

On July 26, 1974 a visit was made to the above referred to well site.

This well was drilled to a total depth of 4,600' without encountering any significiant shows in either the Ferron or Dakota Formations. The well was plugged and abandoned and the site was clean, leveled, and properly identified. It is, therefore, recommended that liability under the bond for this particular well be released. A picture was taken for future reference.

PAUL W. BURCHELL
CHIEF PETROLEUM ENGINEER

PWB:lp

cc: Land Board-Encl.
U.S.G.S.

Form OGCC-3

STATE OF UTAH

OIL & GAS CONSERVATION COMMISSION

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

ML-28212-A

5. LEASE DESIGNATION AND SERIAL NO.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other

7. UNIT AGREEMENT NAME

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

8. FARM OR LEASE NAME
State

2. NAME OF OPERATOR
Willard Pease Oil & Gas Company

9. WELL NO.
Price #2

3. ADDRESS OF OPERATOR
P. O. Box 548 Grand Junction, Colorado 81501

10. FIELD AND POOL, OR WILDCAT
Wildcat

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*

At surface SE.SW.SEC.3,T.14 S.,R.10 E.,S.L.M.

At top prod. interval reported below 1980' from W-line & 966' from S-line.

At total depth

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
Sec.3-14S-10E S.L.M.

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
		Carbon	Utah

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
2-3-1974	3-8-1974	P & A 3-11-'74	Grd.:5958';K.B.:5968'	5959'

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
4602'		none	→	)'-4602'	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
none

25. WAS DIRECTIONAL SURVEY MADE
no

26. TYPE ELECTRIC AND OTHER LOGS RUN
Dual-induction, gamma-density-neutron; gamma-sonic-F-log

27. WAS WELL CORED
no

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8 5/8"	24.00#	228'	12¼"	150 sks.	none

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
		none		

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
	none	

31. PERFORATION RECORD (*Interval, size and number*)
none

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
	none

RECEIVED
DEC 19 1997
DIV. OF OIL, GAS & MINING

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
none		D&A

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
XXXX	XXXX						

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
XXXXX	XXXX		XXXXX	XXXXX		

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)
XXXXXX

TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Detailed Drilling History & Geologic Report

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED H. Dow Gunsley TITLE Consulting Geologist DATE Mar. 26, 1974

*(See Instructions and Spaces for Additional Data on Reverse Side)

DRILLING HISTORY
AND
GEOLOGIC REPORT
ON
WILLARD PEASE OIL & GAS CO.
PRICE #2 WELL
CARBON COUNTY, UTAH

March 27, 1974

By

W. Don Quigley
Consulting Geologist
Salt Lake City, Utah

DRILLING HISTORY
OF
PEASE OIL & GAS CO.
PRICE #2 WELL
CARBON COUNTY, UTAH

Operator: Willard Pease Oil and Gas Company
P.O. Box 548, Grand Junction, Colo. 81501

Contractor: Willard Pease Drilling Co.
P.O. Box 548, Grand Junction, Colo. 81501

Location: SE. SW. Sec. 3, T. 14S., R. 10E., S.L.M., Carbon County, Utah (1980' fr. W-line and 966' fr. S-line)

Elevations: Grd. 5958'; K.B. 5968'

Spudded-in: February 3, 1974

Finished Drlg: March 8, 1974

Surface Casing: $8\frac{5}{8}$", 24.00#, J-55 set at 228' and cemented with 150 sks.

Production Casing: None

Total Depth: 4602'

Production Zones: None

Plugged and Abandoned: March 11, 1974

History

Feb. 1, 1974: Moving-in rig.

Feb. 2: Rigging-up.

Feb. 3: Finished rigging-up. Drilled rat hole. Drilled mouse hole. Began drilling surface hole. Drilled 12¼" hole to 42' with air.

Feb. 4: Drilled 42' to 230' (188'). Encountered water at 150' and rigged up for air-mist drilling. Hole tight; had to work pipe up and down to clean hole. Survey at 216' was 1¼°.

Feb. 5: Worked pipe to clean hole; but finally mixed mud and circulated hole with mud. Cleaned out hole and prepared to run surface casing. Ran 7 jts. of 8⅝", 24.00#, J-55, casing and landed at 228'. Cemented with 150 sks. cement (2% CaCl) with returns to surface. Waited on cement and began nippling-up.

Feb. 6: Drilled 230' to 614' (384'). Finished nippling-up; tested blow-out preventer. Blew water out of casing and drilled ahead with air and 7⅞" bit. Encountered water just below bottom of casing so began air-mist drilling.

Feb. 7: Drilled 614' to 1070' (456'). Drilling ahead in marine sand and shale of Mancos. Drilling at rate of approx. 15 ft./hr.

Feb. 8: Drilled 1070' to 1973' (903'). Made rd.-trip at 1070' for Bit #3. Bit #2 (Reed - Y21G-J) made 840' (230' to 1070') in 31¾ hrs. Drilled at avg. rate of 26 ft. per hr. in Mancos shale. Survey at 1070' was 1¼°. Had reverse drilling break at 1962'. This is probable top of Ferron member.

Feb. 9: Drilled 1973' to 2197' (224'). Made rd.-trip at 2022' for Bit #4. Bit #3 (Reed - YS1G) made 952' in 19 ¾ hrs. Drilled at avg. rate of 48 ft/hr. Drilling in sand, shale, and coal beds of Ferron. A coal bed at 2078' to 2086' (8') was good quality coal. Had good gas flare (5 ft.) at 2130'.

Feb. 10: Drilled 2197' to 2622' (425'). Drilling ahead in sand, shale, and coal at approx. 30 to 40 ft./hr. Had drilling break at 2238 to 2272' and a good gas flare (10ft.) on connection at 2256'.

Feb. 11: Drilled 2622' to 2688' (66'). Hole got tight and sticky at about 2600' and had trouble making connections. Couldn't get beyond 2688' so had to mud-up and circulate. A thick bentonite bed at 2590' to 2680' would not stay open with air-mist. Probable top of Dakota formation is at about 2590'. Hit a hard tight sand at 2635' to 2650'. Top of Cedar Mt. probably at about 2655'.

Feb. 12: Drilled 2688' to 2744' (56'). Conditioning hole and drilling ahead very slowly. Made rd.-trip at 2744' for Bit #5. Bit #4 (HTC - X44) made 722' (2022' to 2744') in 55 hrs. Drilled at avg. rate of 13 ft/hr.

Feb. 13: Drilled 2744' to 2794' (50'). Drilling slow and having lots of trouble keeping bit clean. Numerous bentonite beds keep bit 'balled-up'. Some thin hard quartzitic sandstone beds and chert are interspersed with the bentonite beds. Drilling at about 6 ft/hr.

Feb. 14: Drilled 2794' to 2924' (130'). Drilling slow. Had drilling break from 2872' to 2914' (42'), which was quartzitic sand, varicolored siltstone and shale, with lots of chert. Still having trouble with bentonite beds 'balling-up' the bit. Bit #5 is a button bit and doesn't drill the soft beds very well.

Feb. 15: Drilled 2924' to 3032' (108'). Made rd.-trip at 2955' for Bit #6. Bit #5 (Reed - FP52, button bit) made 211' (2744' to 2955') in 42 hrs. Drilled at avg. rate of 5 ft/hr. in bentonite, varicolored bent. sh., sltst., and hd. thin-bedded, qtzitic ss. Went back in hole with a tooth-bit (HTC - OW4)

and it is drilling much faster. Drilling at an avg. rate of 7 to 12 ft/hr.

Feb. 16: Drilled 3032' to 3157' (125'). Made rd.-trip at 3093' for Bit #7. Bit #6 (HTC - OW4J) made 138' (2955' to 3093') in 16 hrs. Drilled at avg. rate of 9 ft/hr. Installed gas detector on hole at 8 P.M. this date. Had 30 units of gas in mud immediately and fairly steady.

Feb. 17: Drilled 3157' to 3245' (88'). Started out of hole at 3245' for Bit #8. Hole very tight and pulled hard and slow for first 7 stds. Torque Converter broke down with 22 stds. out. Had to shut down for parts and repairs. Waiting on mechanic and repairs. Bit #7 (HTC - OSC1G) made 152' (3093' to 3245') in 21 hrs. Drilled at avg. rate of 7 ft/hr. Had a gas kick of 120 units at about 3230 ft. Samples don't have any shows and contain hard, tight, bent. to quartzitic ss. along with shale and siltstone.

Feb. 18 and 19: Waiting on parts. Repaired and assembled torque converter. Came out of hole. Cut drilling line and found several bad spots. Waiting on new drilling line.

Feb. 20: Drilled 3245' to 3263' (18'). Installed new drilling line. Started back in hole at 2 P.M. Mud is very gas cut - Ran over pits. Over 3600 units on gas detector. Contains heavy fractions of ethane butane and pentane. Had to drill tight spots and fill-up for 7 stds. off bottom. Mud very heavy and clobbered on bottom. Began drilling ahead at about 9 P.M.

Feb. 21: Drilled 3263' to 3300' (27'). Encountered more sand in section. Some of the ss is conglomeratic. Gas background very high - avg. about 100 units. Had a gas kick at 3292' (170 units total with heavy fractions). Mud still highly gas cut. Mud pump

gets gas-locked and looses pressure. Decided to test total interval from 3130' to 3300'. Began circulating at 9:30 A.M. and conditioning mud. Circulated for 2 3/4 hrs. and got mud in good shape (65 sec./qt. Viscosity, and 5 cc. water loss). Started out of hole at noon. Pulled three stds and pipe got tight. Tried to pull thru tight spot and got stuck. (Probably stuck in bentonite zone at 2580' to 2700'). Worked pipe, but couldn't get loose; so called Dowell for pump truck.

Feb. 22: Drilled 3300' to 3329' (29'). Connected Dowell pump truck up and pumped stuck pipe loose (Pumped up to 5000# press. and pulled 140,000# before pipe finally came loose.) Lost no mud into formation. Got free at 5 A.M., put kelly on and washed back to bottom. Began drilling ahead at 8 A.M. Gas indicator registered 120 units when circulation was resumed; levelled out at about 60 units. Decided not to try testing further due to tightness of formation. Encountered a chert bed at 3310'. Bit gave out at 3316'. Made rd-trip for Bit #9. Bit #8 (Reed - YS4G) made 71' (3245' to 3316') in 17¼ hrs. Drilled at avg. rate of 4 ft/hr. Had only one tight spot on way out of hole. Went back in hole with button bit (rerun) and only had one small tight spot. Built mud viscosity up to 70 sec./qt. Gas detector registered about 100 units when circulation was commenced.

Feb. 23: Drilled 3329' to 3426' (97'). Encountered a ss-quartzite bed at 3330' to 3358' and had drilling break. Drilled at rate of 15 feet/hr. Gas detector was down at this time but zone was quite tight and had no shows in samples. Gas detector has levelled - off at about 50 units. Made rd-trip at 3426' for Bit #10. Bit #9 (Reed - FP52J button) and a rerun, drilled 110' (3316' to 3426') in 24 hrs. Drilled at avg. rate of 4½ ft. per hr. (Had no trouble making trip).

Feb. 24: Drilled 3426' to 3531' (105'). Trip gas registered 550 units and levelled off at about 50 units after 3 hrs. drilling. Drilling in red shale and siltstone at 3430'. Drilling at avg. rate of 5 to 6 ft/hr. Samples suggest a change at about 3370' which could be the Morrison section.

Feb. 25: Drilled 3531' to 3647' (116'). Encountered a green, glauc. sh. and ss. at 3550'. Drilling at rate of about 5 ft. per hr. Gas reading steady at 60 to 75 units. Mud Vis. is 45 to 50 sec. per qt. and weight is 9.2#/gal.

Feb. 26: Drilled 3647' to 3753' (106'). Drilling slowly at avg. rate of 4 ft/hr. in lms., hd. vfg. ss., and varicolored sh. Encountered a lt. brn lms. at 3650' which might be (?) the top of the Entrada. Gas reading is steady at about 50 units.

Feb. 27: Drilled 3753' to 3862' (111'). Drilling slowly in lms., qtztic ss., and dol. sh. Drilling at avg. rate of 4 ft/hr. Gas reading steady at about 50-60 units.

Feb. 28: Drilled 3862' to 3924' (62'). Decided to log hole and check bit at 3882', so conditioned mud and came out of hole. One cone on bit was gone. Bit #10 (Smith F-4) drilled 455' (3427' to 3882') in 95 hrs. Drilled at avg. rate of about 4½ ft/hr. Ran Dual - induction log on hole and found that top of Entrada is probably 600' to 650' deeper. (Log tops to date are: Ferron - 1958'; Dakota - 2590'; Cedar Mt. - 2654'; and Morrison - 3365'). Finished logging at 1:00 P.M. and went back in hole with button bit. Had over 2000 units of trip gas.

Mar.1: Drilled 3924' to 4025' (101'). Drilling in qtzitic ss., silic. sh. and slst. at rate of 4 ft./hr. Mud was suddenly cut and tanks overflowed at 3987' but there was no increase in gas readings. Mud was frothy and Vis. dropped from 58 to 38 and wt. dropped from 9.4 to 9.2. No evidence of chlorides in mud. Mud finally smoothed out and returned to normal.

Mar. 2: Drilled 4025' to 4151' (126'). Drilling rate picked up at 4055' to 4078' in a red bent. sh. and siltstone. Drilling at rate of 6 ft/hr., decreasing to 4 ft/hr. Possible top of Summerville at about 4055'.

Mar. 3: Drilled 4151' to 4298' (147'). Drilling rate at 4204' to 4294' was 7 to 8 ft/hr. in a red, calc. ark. ss. and slst. Drilling rate decreased to 4 ft/hr. after 4294'.

Mar. 4: Drilled 4298' to 4369' (71'). Made rd-trip at 4331' for Bit #12. Bit #11 (Reed F-52 button) made 449' (3882' to 4331') in 86½ hrs. Drilled at avg. rate of 5 ft/hr. Bit #12 (Tooth-bit) is drilling at rate of 4 ft/hr.

Mar. 5: Drilled 4369' to 4429' (60'). Had a reverse drilling break at 4360'. Drilling rate decreased from 12 min/ft. to 20 min/ft. Drilling in red, hard, calc. siltstone. Encountered a hard v.f.g. green qtztc. mica. glauc., calc. ss. with black specks at 4410'. This is probably the top of the Curtis ss. Made rd-trip at 4414' for Bit #13. Bit #12 (HJG - a rerun) made 83' (4331' to 4414') in 23½ hrs.

Mar. 6: Drilled 4429' to 4484' (55'). Drilling rate is very slow - about 2 to 3 ft/hr. Made rd-trip at 4484' for Bit #14. Bit #13 (HTC-X-44) (a rerun) made 70' (4414' to 4484') in 23½ hrs. Drilled at avg. rate of about 3 ft/hr. in green glauconitic v.f.g. ss. Had to ream 60 ft. to get back to bottom.

Mar. 7: Drilled 4484' to 4545' (61'). Made rd-trip at 4545' for Bit #15. Bit #14 (HTC-WD7) made 61 ft. (4484' to 4545') in 20¼ hrs. Drilled at avg. rate of 3 ft/hr.

Mar. 8: Drilled 4545' to 4602' (57'). Encountered a formation change at 4550'. Went into a gray siltstone, red and green shale, and v.f.g. biotitic ss. Could be the top of the Entrada formation. Drilled to 4602' and decided that 50' of the Entrada had been cut; so conditioned hole for logging and came out of hole. Bit #15 (Reed - YT1G) drilled 57' (4545' to 4602') in 17¼ hrs. Drilled at avg. rate of approx. 3 ft/hr.

Mar. 9: Ran Dual-Induction, gamma-density, Compensated Neutron-Formation density, and gamma-sonic logs of well. Based on logs it was decided to test several zones with straddle packers. Went in hole with test tool, straddle packers and hookwall for DST #1.

Interval: 3315' to 3355' (40')
Initial open: 15 minutes
Initial Shut-in: 45 minutes
Final open: 90 minutes
Final Shut-in: 2 hours
Blow: Strong blow immediate and continuing thru-out test. Gas to surface in 20 min.; gauged 4,000 cu. ft./day and remained constant thru-out test. Gas flare was about 4 ft. out of 2" line.
Rec.: 730' of fluid: 360' of gas cut mud and 370' of gas cut water. Water has 12,450 ppm chlorides and has a resistivity of .20 ohms at 60°F.
M F E Chamber: 240# pressure; ½ cu. ft. of gas; 1800 cc of salt water (15,000 ppm, .14 ohms)

Pressures:	I H P = 1673#	F H P = 1659#
	I F P = 76# - 147#	F F P = 181# - 311#
	I S I P = 1125#	F S I P = 1046#
		B H T = 105° F.

Mar. 10: Went in hole with test tool and straddle packers to run DST #2:

Interval: 2795' to 2825' (30')
No initial open or shut-in period
Open: 45 minutes
Shut-in: 90 minutes
Blow: Very weak blow - dead in 10 min.
Remark: Top packer didn't hold on the first setting, so had to reset tool; thus some mud entered drill stem before zone was tested.
Rec.: 500' of drilling mud due to misset - slightly cut by water. (Water tested 2000 ppm. chlorides and .5 ohms at 60°.
M F E. Tool: 75# pressure; 2200 cc of drilling mud.

Pressures:					
	IHP	= 1404#	FHP	=	1389#
	FFP	= 175#	BHT	=	99°F.
	FSIP	= 231#			

—Went in hole with test tool and straddle packers to run DST #3:

Interval: 2030' to 2060' (30')
Initial open: 15 minutes
Initial shut-in: 45 minutes
Final open: 60 minutes
Final shut-in: 90 minutes
Blow: Very weak blow initially and continuing until end of test.
Rec.: 60' of drilling mud.

Pressures:					
	IHP	= 1122#	FHP	=	1111#
	IFP	= 118#	FFP	=	118#-152#
	ISIP	= 767# and building	FSIP	=	536# and building
	BHT	= 95° F.			

M F E Tool: 2300 cc. of drilling mud; no pressures.

Mar. 11: Went in hole with test tool and straddle packers to run DST #4:

Interval: 2050' to 2201' (151')
Initial open: 15 minutes
Initial shut-in: 1 hour

Final open: 1 hour
Final shut-in: 2 hours
Blow: Strong blow immediate - increasing gradually thru-out test. Gas to surface in 50 min. Volume too small to measure.
Rec.: 1442' of fluid: 186' of slightly water and heavily gas cut mud, 1256' of highly gas cut water. Water has 5000 ppm chlorides and .38 ohms resistivity at 60°F.
M F E Tool: Pressure 400#; .63 cubic ft. of gas; 2090 cc. of water (5250 ppm and .30 ohms)

Pressures:				
	IHP =	1115#	FHP =	1105#
	IFP =	146#-259#	FFP =	276#-558#
	ISIP =	882#	FSIP =	896#
	BHT =	99°F.		

Laid down test tool and ran drill collars in hole. Laid down drill collars, and went in hole open-ended with drill pipe to plug well.

Placed cement plugs as follows:

Plug #1 - 30 sacks at 3400' to 3300'
Plug #2 - 40 sacks at 2700' to 2550'
Plug #3 - 70 sacks at 2220' to 1920'
Plug #4 - 25 sacks at 250' to 150'
Plug #5 - 10 sacks at surface with well marker.

Mar. 12-13: Rigged down and moved rig.

GEOLOGIC REPORT
ON
PEASE OIL & GAS CO. - PRICE #2 WELL
CARBON COUNTY, UTAH

General Geology

The Willard Pease Oil & Gas Company Price #2 well was located as near the crest of the Price Anticline as the acreage block would permit. The location (like the Price #1 well) still was on the north flank of the structure; but the well was about 300 ft higher structurally than the Price #1 well. This location was chosen so as to be as high on the structure as possible for an Entrada test.

The results of the Price #1 well indicated that natural gas in unknown amounts would probably be present in the Ferron member of the Mancos in the #2 well, but since no production or indications of hydrocarbons had ever been obtained in the Entrada formation in any of the wells in the area (closest well is about 12 miles to the south), it was deemed advisable to select the best known structural position for the committed Entrada test. It was also assumed that if mud had to be used as a circulating medium to drill the well from the Ferron down to the Entrada that there would be little chance of reclaiming economically any gas found in the Ferron initially.

The Price anticline is located at the base of the Book Cliffs to the north and the Wasatch Plateau to the west. The Clear Creek gas field, producing from the Ferron sandstone, is located on the east flank of the Wasatch Plateau, about 25 miles west of the structure. The very small and shallow (500' to 1200') Miller Creek gas field is located about 10 miles to the south. This field has a number of small shut-in gas wells in the Ferron and Tununk members. The Farnham Dome structure and CO_2 gas field is located about 14 miles to the southeast of the Price anticline. Natural gas is quite possible in the area and therefore any prospective structure has merit and potential. To date, only the Ferron sandstone has been

productive in the area and is, therefore, the principle objective. No natural gas has been developed or found in the area thus far in the Dakota, Cedar Mountain, Morrison, or Entrada formations which are productive in the Book Cliffs area of eastern Utah in Grand County. Thus these deeper formations below the Ferron were highly speculative and were definitely secondary until some definite shows of hydrocarbons were found. The Pennsylvanian - Manning Canyon formation, however, had shows in deep tests at Miller Ck. and at Hiawatha (North Springs) south of the Price structure; in fact, the North Springs well was later completed as a producing gas well (IPF 3440 MCFGPD) from the Manning Canyon formation. The Sinbad section also contained gas (80% to 50% non - combustible) in the North Springs, Miller Creek, and Gordon Creek wells. Thus there are deeper hydrocarbon prospects in the area which have potential.

Prior to the drilling of the Price #2 well, the stratigraphic section beneath the Price anticline was quite uncertain and speculative. It was assumed that the sequence and lithology would not be comparable to that found in wells located along the Book Cliffs east of the San Rafael Swell. For instance, the Cedar Mt. - Morrison section found at Gordon Creek, which is just 12 miles west of the anticline, was 2100 feet thick (from the base of the Dakota to the top of the Entrada). This is compared to the 600 to 700 ft. section found farther east. The Entrada in the Gordon Creek well was about 1100 feet thick compared to the normal 400 feet. The Carmel was 1200 ft. thick. The Navajo, Kayenta, Wingate, Chinle, Moenkopi, and Kaibab were approximately normal in thickness. It was assumed that the thickness of the Dakota to Navajo section under the Price anticline would be somewhat less than the 4400 ft. found at Gordon Creek; but how much less was unknown. This same section was 3360 ft. thick in the North Springs well and about 3000 ft. thick in the Miller Creek wells. The Cedar Mt. - Entrada section was 1850 feet and 1800 feet thick in these wells respectively. The Entrada found in these wells was mostly red silty sandstone, siltstone, and shale and had little prospects of favorable reservoir zones. It was estimated, prior to drilling the Price #2 well, that the depth to the Entrada might be about 4550' (4850' at the Price #1 location); but this was little more than wild speculation at the time.

As noted above, the Price #2 well was about 300 ft. higher structurally than the Price #1 well. This is an average plunge of 150 ft. per mile in a northeast direction or somewhat less than 2° dip in this direction. The top of the structure is about 2 miles southwest of the Price #2 location. Section 16 of 14S - 10E is the approximate top of the structure,

Drilling History and Techniques

A complete daily drilling history of the Price #2 well precedes this section. It was unfortunate that water was encountered at 250' necessitating air-mist drilling thru the Ferron section; thereby preventing an accurate indication and test of the amount of natural gas in this zone.

Like the Price #1 well, the thick section of bentonite and bentonitic shales in the Dakota formation and in the top of the Cedar Mountain formation prevented further drilling with air-mist and it was necessary to convert to mud-drilling at 2680 feet. The remainder of the hole to total depth (4602') was drilled with mud. This caused considerable damage to the gas zones in the Ferron and prevented any further gas flows from coming to the surface. Consequently, a mud-logging unit with gas detection equipment was put on the hole at about 3125 ft. to monitor any future gas flows into the mud stream. The mud-drilling decreased the drilling-rate drastically and much of the hole from 3200 ft. to 4600 ft. was drilled at the rate of 3 to 6 ft/hr. The occasional gas flow, especially on trips, kept the mud 'gassed-up' and a high viscosity had to be maintained until the mud weight reached 9.4 lbs/gal. The 9.4# mud provided sufficient hydrostatic pressure on the Ferron gas zone to prevent the gas entering the mud stream. On occasions before the mud wt. reached 9.4#/gal., the gas detecter registered over 3600 units after a shut-down period.

The well was logged at a depth of 3880' to determine the exact position in the stratigraphic section. A red shale and siltstone section from 3420' to 3550' was similar in character to the normal Summerville section; a green glauconitic shale

and sandstone section from 3550' to 3750' was similar to the normal Curtis formation; and a light brown sandy limestone and sandstone section from 3800' to 3880' was somewhat similar to the expected Entrada section in the area. However, the log when correlated with the closest wells revealed that the bottom of the hole at 3880' was near the approximate base of the Morrison formation; and the Summerville, Curtis, and Entrada were still deeper. It was estimated at this point that the top of the Entrada would be below 4500'.

After the total depth of 4602' was reached and the well was logged the second time, it was found that the top of the Entrada was at 4552' and that the formation had been penetrated by exactly 50 ft. The logs also indicated two prospective gas zones in the Cedar Mt. formation; and it was deemed advisable to test these zones between straddle packers, since casing was so expensive and difficult to obtain. These two zones; a basal sand in the Cedar Mt. at 3330' to 3360', and an upper Cedar Mt. sand at 2810' to 2828', were therefore tested, along with two different zones in the Ferron member. The detailed results of these four drill-stem-tests are listed in the 'Drilling History' section of this report on Mar. 9, 10, and 11. The general results of the tests failed to indicate any economical flows of natural gas; and the well was plugged and abandoned.

Stratigraphy Of Well

Only the Mancos shale formation is exposed at the surface around the area of the well site. The Castlegate sand and Mesaverde rocks are exposed around the edges of the cliffs to the north and west of the well.

The well penetrated the rest of the Mancos formation, the Dakota formation, the Cedar Mountain formation, the Morrison formation, the Summerville formation, the Curtis formation, and the top 50 feet of the Entrada formation. Perhaps it should be noted here that there is some confusion about the Cedar Mountain - Morrison section in the area. This whole interval has often been referred to as only the Morrison section; however, it is properly divided into the Cedar Mt.

formation on top with the Morrison formation below. The type section for the Cedar Mt. formation is at Cedar Mountain which is located about 30 miles southeast of Price, Utah. The Miller Creek, North Springs and Gordon Creek wells all had a well defined Cedar Mountain section and an equally well defined Morrison section.

The formations with their tops, thicknesses, and datum points which were encountered in the Price #2 well, as determined from the electric logs, are as follows:

Formation	Depth to Top	Thickness	Datum
Mancos (Upper)	Surface	1958'	5968' K.B.
(Ferron Member)	1958'	280'	4010'
(Tununk Member)	2238'	352'	3730'
Dakota	2590'	64'	3378'
Cedar Mountain	2654'	711'	3314'
Morrison	3365'	725'	2603'
Summerville	4090'	326'	1878'
Curtis	4416'	136'	1552'
Entrada	4552'	———	1416'
Total Depth	4602'	———	———

Comparisons of the thicknesses of the formations as indicated by the electric logs of the other wells in the area which have been drilled into the Entrada formation are as follows:

Formation	Price #2 Well	Miller Ck. Well	North Springs Well	Gordon Ck. Well
Dakota	64'	38'	43'	80'
Cedar Mountain	711'	643'	784'	800'
Morrison	725'	668'	598'	773'
Summerville	326'	338'	296'	433'
Curtis	136'	138'	174'	130'
Total Thickness	1962'	1825'	1895'	2216'

It is obvious from the above comparisons that the section from the top of the Dakota formation to the top of the Entrada formation in the Price #2 well was only 250 ft. thinner than the one found at Gordon Creek; and was thicker than the same section found in either the Miller Creek or North Springs wells.

This section apparently thickens from the east to the west and possibly to the north.

A detailed description and sample log of the cuttings from the well are attached hereto.

Gas Zones

Since the upper part of the hole (0' to 2688') was drilled with air-mist, any natural gas encountered in the well was soon or immediately observed at the surface. However, there was still a certain amount of immediate damage to the reservoir rocks with the water and an uninhibited flow of the gas from a potential reservoir was not possible.

The first flow of gas observed in the well was found in the Ferron member at 2130' and a second good flow was observed at 2150'. These flows were obviously coming from thin stringer sands between the coal beds. A thick sandstone was drilled from 2160' to 2200', but no immediate increase in the gas volume was observed; in fact, there appeared to be an increase in the flow of water into the hole, and a later drill-stem-test (DST#4) of this sand recovered over 1400 ft. of slightly saline water in one hour. A fair flow of gas (10 ft. flare out a 7" blooey-line) was observed on a connection at 2256', but it was believed that this gas was coming from zones penetrated previously.

One other zone (3330' to 3360'), a basal sand in the Cedar Mountain formation, gave up some gas on a drill-stem-test; about 4,000 cubic feet per day, plus a small amount of salt water. This zone is obviously an objective in future wells and should be considered in further drilling programs in the area.

Conclusion and Recommendations

The drilling of the Price #2 well revealed several interesting facts which were not too well known previously.

A. The Cedar Mountain-Morrison-Summerville-Curtis section is approximately 1800 to 1900 feet thick in the area.

B. The basal sand (Buckhorn equivalent farther to the east) in the Cedar Mountain formation is a likely prospect for hydrocarbon (natural gas) accumulations in the area.

C. The Morrison formation, below the Cedar Mountain, is not a likely prospect for hydrocarbon accumulations.

D. The Entrada formation is not a likely prospect for hydrocarbon accumulations. It is primarily shale and siltstone, and very-fine-grained quartzitic sandstone, which is quite dissimilar to the Entrada farther to the east.

E. The Dakota formation is primarily composed of bentonitic shales and bentonitic sandstone and has only minor chances of hosting natural gas accumulations in the area.

F. The Ferron member of the Mancos formation is the most likely gas-bearing zone in the area, but there are certain limitations to the reservoir sands and to the compatibility of the zone for extended productivity. The gas is probably originating from the coal beds and is accumulated in the thin sandstone beds between the coal beds. The massive sandstone bed at the base of the Ferron member is apt to contain water. (This latter fact was also evident in the Price #1 well). The amount of gas that can be obtained out of the Ferron is still unknown. It is anticipated that each well might have an initial open flow rate of 250 to 750 MCFGPD. The life and deliverability of the wells are also unknown factors.

The shallow and deeper natural gas prospects in the area should be developed separately. The Ferron gas zone is quite shallow (2000' to 4000') thruout most of the area, which permints development in a fairly inexpensive manner. Since the thickness of the interbedded sands are thin and erratic, the sands do not lend themselves economically to selective

perforating and fracture treatment. Thus the proper development program should provide for setting casing on the top of the Ferron member and drilling the gas zones with air; being very careful not to penetrate the basal water sand.

In most cases, if wells are drilled below the Dakota formation in the area, it will be necessary to mud-up and this would normally preclude any chance of reclaiming the gas in the Ferron member economically. Therefore tests of the potential basal sand of the Cedar Mountain formation should be conducted separately. The shallow Ferron sands could be developed on a 160' acre spacing pattern, and a Morrison test could be drilled near the center of each section initially.

It is quite essential that a test and indication of the possible productivity of the Ferron gas wells be obtained in the area before any extensive drilling program is initiated. It is possible that the volume of gas from the Ferron might be quite small and short-lived. This would have a considerable bearing on any future development plan for the area. The reverse is also true.

The electric logging program accomplished on the Price #2 well was far more detailed than necessary and was ridiculously expensive. Electric logs have become extremely expensive in recent months and it is a terrible waste of money to run more logs than necessary. Only minimum logs should be considered; a dual-induction laterlog and a gamma-density-neutron log is generally more than adequate.

W. Don Quigley

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Consulting Geologist
Salt Lake City, Utah
A A P G Cert. #1296

Pe[illegible] Oil & Gas Co - [illegible]ice #2 Well

SE SW Sec. 3 14S-11E
Carbon County, Utah
Elev. 5465 KB

See E-Log

800 Dk gry calc frosted fg ss & silty gry calc sh

Dk gry fg frosted fg ss w/ ang qtz grns

900 Dk gry fg frosted fg ss & dk gry slty sh

Dk gry sdy calc sh & sltst

1000

Same brn sdy lms & dk gry sdy calc sh & sltst

A Same aragonite

A

Blk calc sh & lms

1100

A

A

A

A Dk gry calc sh w/ conchoidal frac & aragonite

A

1200 A

A

A

A to blk

Dk gry calc slty mica sh

1300

1400 b Dk gry sl calc marine sh & lt gry mica bent.

b

b

b Dk gry sl calc sdy mica sh & gry ss

b

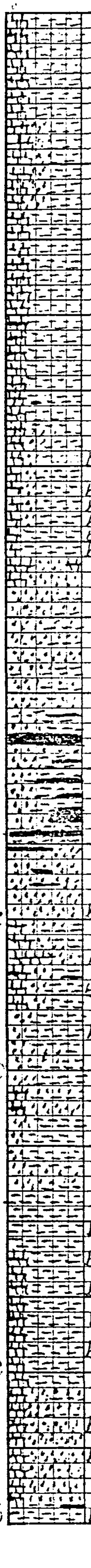
b A

1500 b Dk gry to blk calc sh & bent.

b Blk calc sh w/ conch fr.

1600

Price #2 Well Con't 1600' to 2600'



1600
A DK. gray to blk. calc sh. & anhy.
A DK. gray, sl. silty, calc. sh. w/ anhy & pyrite
1700
Blk. calc. mar. sh.
w/ conc.
1800
A
AN Blk. calc sl. silty sh. + lt. brn to amber anhydrite
1900
b AN Blk. calc silty sh. w/ anhy & bent
DK gray to blk. sdy mica. sl. calc. sh. some calcite
b c
Blk. mar. dns. sh.
Kmf
b Lt. brn xln anhy & sdy lms. & bent.
Blk. v. hd. dns. vfg. frosted ss. + tgt & slst. mica & glauc.
2000
b Tgt. vfg. blk. ss. lt. gray mica. bent & dk gray sugary slst.
b Glauc. & montmorillonite in slst. & ss. & mica bent.
b Brn vfg. bent. ang. qtz ss. + blk. sdy sh. beds.
b Frosted to qtzitic brn. ss. vfg. ang. dns. ss. + gray slst & sh.
b Fg. to mg. bent. ss. - some por.
b Gray sdy sh. & slst. w/ minor coal inc.
Solid coal bed 8 ft. thick 2077-2085
Wh. to dk. gray. frosted tgt. mica ss. & slst.
Tgt. vfg. dns. brn to blk. ss. & slst. w/ coal inc. (5')
2100
b DK. gray sdy sh. & slst., coal, & bent.
b * + small gas flare, at sur. + [illegible] break.
Brn vfg. mica carb. ss. w/ coal inc., slst & coal.
Coal + lt. brn under clay.
Coal & brn fg. to dns. glauc. ss.
b * Lt. brn to wh. fg. bent. friable to loosely consol. ss. w/ coal particles (por.)
b * Wh. frosted ss. & as above
b * Tgt. Fair gas flare
bb Tgt & v. bent.
2200
b Gray to brn calc. vfg. to dns ss. dk gray sdy sh. & slst.
b Lt. brn xln lms, sdy sh., slst & dns ss
b Brn sdy lms & calc ss.
b Lt. gray bent., frosted dk gray to blk dns ss. w/ coal incls. & gray slst
b DK. gray sdy sh. & bent.
b ** (Good gas flare (10 ft) at conn. at 2250)
DK. gray to blk. sl. silty non-calc sh.
b
2300
DK. brn fg. to dns ss., & dk gray sdy sh.
DK. gray sdy sh.
DK. gray ang. vfg. sl. calc. ss. + gray sh.
b
Blk. sdy sh.
b & some dk brn ang. ss. + bent
DK. gray dns & hd vfg glauc. ss & slst.
Blk. carb. sh.
2400
b Blk. sh. & bent.
b Blk. carb sh. & bent.
b Blk. calc sh. & bent.
b
b
Blk. calc sh. & bent.
2500
DK gray to blk vfg. ang. ss & slst (calc.)
b DK. gray vfg to fg. calc glauc. ang. ss. & bent. + mica
b
b Brn. lt. vfg. to m.g., sl. calc & mica, qtz ss.
Kd
Brn vfg. to mg. sl. calc & mica qtz ss.
Brn & gray dns qtzitic ss. w/ some gray sdy sh. w/ coal inc.
bb Grn. gray bent. & bent. sh.
2600

Price #2 Well (cont) — 2600' to 3600'

2600 Lt gry [illegible] bent [illegible] & g[illegible] bent sh.
Lt gry-grn bent & sh. & pur. sh. (mica) incl.
Lt gry, grn, & pur. bent & sh.
Kd ss → plus some brn vfg. dns bent ss
Kcm
Lt gry, lt grn, sdy to soft bent & some dns hd. ss.
2700 Lt. gry sdy bent.
Lt. gry sdy bent, w/ some coal specks.
Lt brn dns qtztic ss; Lt gry, grn, blk, & pur. bent sh (sl. calc)
Lt gry, grn, brn bent
Lt gry, lt grn, & pk. bent sh.
Rd to pk, gry grn bent. sh & bent
Varic. sdy sh & slst. + grn & gry bent sh
2800 ← DST #2. Rec. [illegible] of mud — [illegible] to mis-set.
Lt brn to gry bent fg ss + varic. bent sh
Lt. gry fg. w bent ss + bent. sh + cln to smoky chert
Varic. sh & lt brn to gry bent fg ss + ch
Varic. sh slst & lt brn bent fgt. ss. ch & py
Lt brn bent fg. ss ch & varic. sh
Wh lt gry & grn bent. varic. sh & brn dns fg. bent ss & ch.
2900 Varic. sh, bent & brn qtzitic ss.
Rd, grn, gry, pur. bent sh, slst. & brn dns ss.
Gry, grn, pk, & wh. bent
Varic. bent. sh & bent & brn xln to crypto-xln dol. & gry vfg dns ss.
Mostly rd. bent. sh
3000
Rd-brn bent. sh. & rd slst.
Rd-brn calc. bent sh & slst.
Rd, gry, grn calc. sh & slst, ch. & brn chty dol.
Purple dol. sh. & ch. plus gry dol sh. & thin stks of wh. qtzitic ss.
3100 Gry-grn bent sh. & slst (calc)
Gry grn & pur. bent. sh & slst.
Grn, pur, rd bent. calc sh & slst & some fg. to dns brn bent ss & dol.
\+ Wh. to lt. brn fg. calc. bent. ss. w/ por. no fluor.
\+ Lt brn to wh fg. calc. bent ss (spec) & brn dol. & varic. sh.
Varic. bent calc sh & slst.
* Wh fg. bent. calc. ss (slight. gas kick) 10 units above base + tgt.
Varic. bent. calc. sh & slst.
3200 Wh to lt brn dns calc qtzitic ss; dol; & dol. sh.
* Wh to lt. brn vfg. to dns calc & bent ss ← gas kick? (120 units total)
* ← High gas kick (3600 units) after shut down for 3 [illegible]
Wh & dk. brn fg. to vfg. mica ss. & varicolored bent sh.
Wh. calc. fg. to vfg. ss w/ rnd grns (over 200 units of gas)
Wh. calc. cong. fg ss. w/ varic. dol. to bent sh. & ch (170 units of gas)
3300 Lt. brn chty lms. — wh. calc vfg ss & dol. sh. & ch
Lots of ch. & chty lms. & sh.
Cln to wh. to amber qtzite, ch. & lt brn chty lms. & cong'l ss.
Wh vfg. calc tgt ss & qtzte. & ch
← DST #4 [illegible] [illegible] (HMCF) + 730 [illegible]
Wh to lt. brn cln crypto-xln quartzite — & ch — Ang. frag. — conl. cong'l.
Jm
Cln to amber qtzte & ch. w/ sm sh & chty dol.
Gry, pur, & buff [illegible] sh, qtzte & dol. & ch.
3400 Gry & choc dol. hd sh — qtzte & ch
Rd, gry & pur. sh (silic & dol.) ch. & qtzte
Rd gry dns sh & Rd. sh. & slst.
Rd sdy sh & slst
Rd sdy sh & bl-gry sh. & ch. (Gas background about 50-60 units) & grn bent sh.
Rd sdy sh slst & ss.
Rd sdy sh — rd lms. rd sdy lms. — pk sdy bent. sh.
3500 Rd dnk. ss. slst, rd sdy to xln lms. bl gry dol sh, & grn bent sh, ch & qtzt
Rd gry & pur. sdy sh, slst. & ss. w/ anhy + some lt brn xln lms.
Some grn. grave. sh. & vfg. ss
Grn-gry grave vfg. to fg calc ss w/ phlogopite-lepidolite & grn sh.
Grn. qtzite mica [illegible] fg (to cong'l) ss / ch peb & sdy to xln lms.
3600

Price # 2 Well (G [illegible]) 3600'–

3600' Grn to grn gry glauc sh & grn vfg to crs mica ss w/ch pebs – sdy to xln lms,

Gry grn glauc sh & vfg glauc mica ss & lt brn xln lms & ch.

Lt brn xln to sdy lms.

& some grn-gry glauc ss & lt pur sh.

3700' Brn lms, rd to pur sh, lt brn vfg ss, rd slst & sh.

Lots of pur dol sh, brn lms, lt gry & brn vfg ss, & some wh vfg to gry cong ss.

Wh vfg bd calc sl glauc ss & gry to pur dol sh.

Wh fg calc-glauc ss w/ smoky qtz pebs.

Lt gry bent ss & sh.

Lt gry lms, sh & vfg ss, pur and rd dol sh & ch.

Grn pur gry & rd dol sh, gry lms

Lt brn lms & varic dol sh.

3800' Lt brn sdy lms & lmy ss & ch & gry dol sh.

Wh vfg to cg bent sl calc ss w/ ch pebs.

Gry, rd, dol to sdy sh & brn lms.

& wh fg to cong ss w/ glauc & ch pebs.

3900' [illegible]

[illegible] w/ [illegible] pebs

[illegible] sh w/ ch

Lt brn [illegible] some [illegible]

[illegible]

[illegible] slst [illegible]

Lt [illegible] sdy lms.

[illegible] sh, brn sh, ch & [illegible] lt brn sdy lms

4000' [illegible]

[illegible] slst [illegible]

[illegible] brn [illegible] slst [illegible] spotted slst

Lt brn to pk bent sh & dk brn slst.

Lt [illegible] to pk bent sh & slst

Rd bent sh & slst

Js

[illegible]

[illegible] lms.

[illegible] lms

4100' Wh [illegible] ss & cong ss & rd [illegible] slst

[illegible] ss & brn [illegible] sh & lms

Gry grn & rd sdy sh & sdy lms

Rd brn slst sh & ss & ch

Rd to brn [illegible] ss & gry lms.

Lt gry [illegible] ss & slst.

Rd slst & grn & gry [illegible] & bent sh.

Rd calc slst sdy lms.

4200' Some wh cong ss

Grn, gry, & pur, glauc to bent sh.

& some rd-brn sdy sh.

Rd calc slst & sh, sdy lms & gry sh & ch.

[illegible] - gry & pur [illegible]

Brn [illegible] lms, calc [illegible] slst

4300' Brick rd calc sh & slst.

Rd-brn calc slst & vfg dk ss.

Gry sdy sh & slst [illegible] slst & ss.

[illegible] gry sh & slst & lms.

Brick rd [illegible]

4400' Jcu

Grn-gry glauc mica calc vfg ss w/ blk specs

Sm blk carb sh & grn mica sh & pur sh

Grn vfg glauc mica ss & grn, pur & blk sh

4500' Grn glauc calc mica vfg (sl coarser) ss w/ biotite

Sm [illegible] sh [illegible] sh &

Gry blk [illegible] sh, brn lms.

Je

[illegible] bent sh

[illegible] ss & gry, blk [illegible] bent sh.

Gry vfg biotitic ss & slst

Lt gry [illegible] sh & [illegible] ss & ch.

w/ qtz xls.

4600'

JOHNSTON

Schlumberger

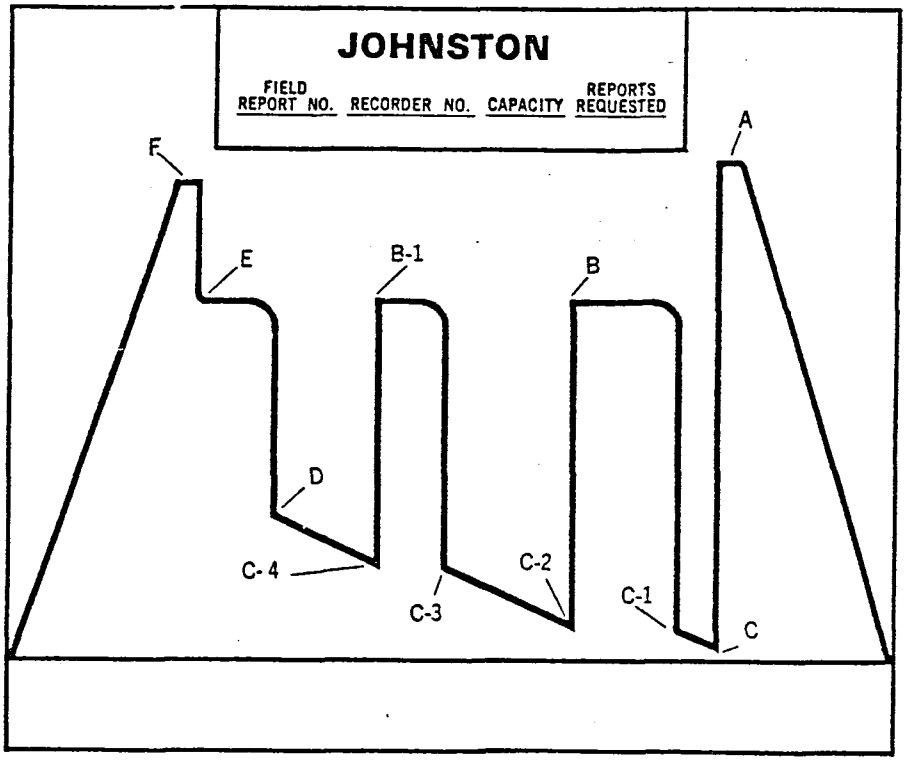
technical report

F. R. # 03447 C

COMPANY PEASE OIL AND GAS COMPANY WELL PRICE #2 TEST NO. 1 COUNTY CARBON STATE UTAH

JOHNSTON
...found a better way

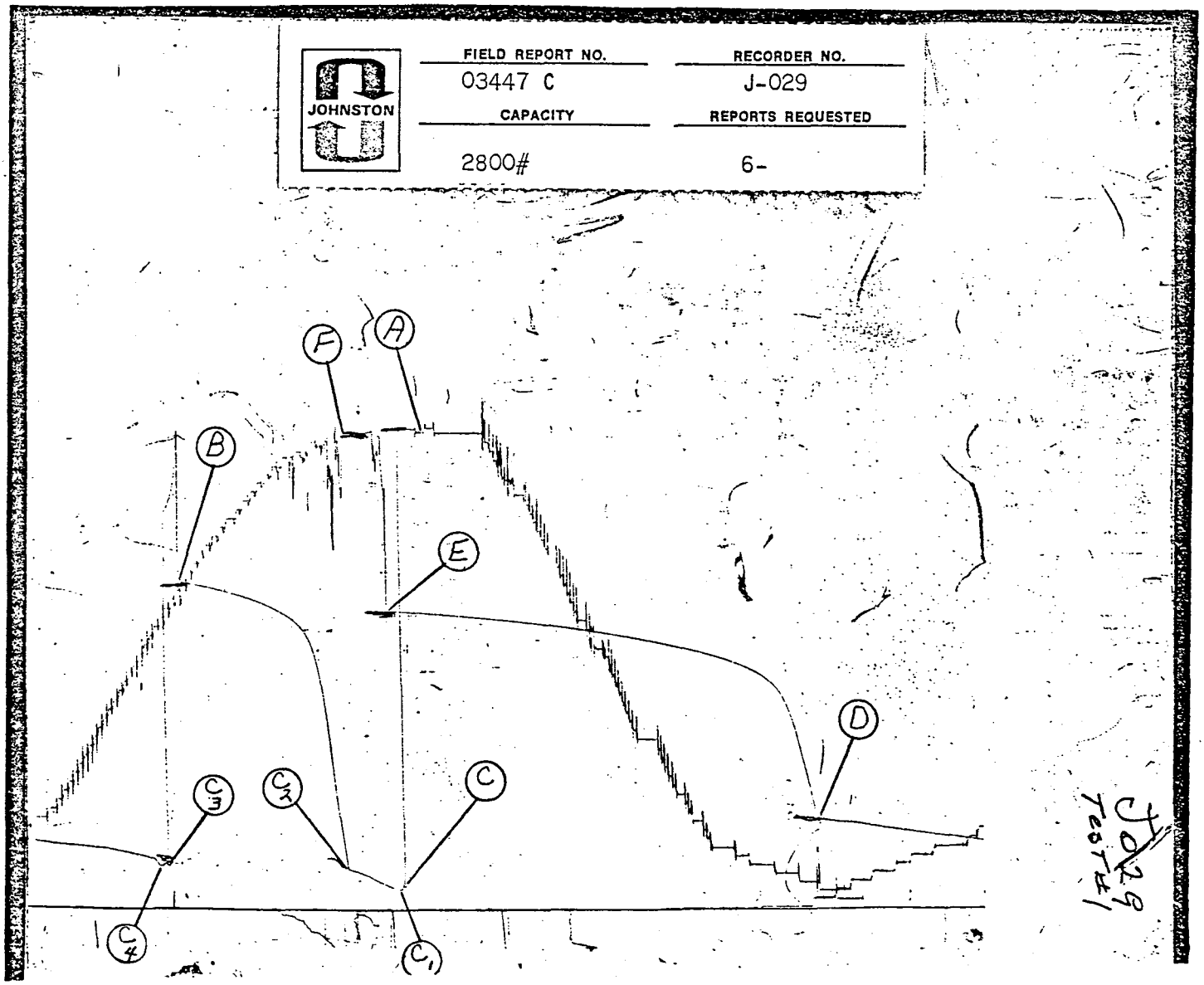
GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



A. Initial Hyd. Mud
B. Initial Shut-in
C. Initial Flow
D. Final Flow
E. Final Shut-in
F. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings, (testing different zones).

A-1, A-2, A-3, etc. Initial Hyd. Pressures
B-1, B-2, B-3, etc. Subsequent Shut-in Pressures
C-1, C-2, C-3, etc. Flowing Pressures
D-1, D-2, D-3, etc. Subsequent Final Flow Pressures
E-1, E-2, E-3, etc. Subsequent Final Shut-in Pressures
F-1, F-2, F-3, etc. Final Hyd. Mud Pressures
Z — Special pressure points such as pumping pressure recorded for formation breakdown.



JOHNSTON ...found a better way

PRESSURE DATA

Instrument No.		J-029		
Capacity (P.S.I.G.)		2800		-
Instrument Depth		3320'		
Instrument Opening		INSIDE		
Pressure Gradient P.S.I./Ft.				
Well Temperature °F.		105		
Initial Hydrostatic Mud	A	1660		
Initial Shut-in	B	* 1138		
Initial Flow	C	88		
	C-2	141		
	C-3	161		
Final Flow	D	316		
Final Shut-in	E	* 1040		
Final Hydrostatic Mud	F	1656		
Remarks:	C-1	71		
	C-4	156		

Field Report No. 03447 C

TIME DATA

Time Given	Time Computed
46 Mins.	Mins.
16 Mins.	Mins.
- Mins.	Mins.
- Mins.	Mins.
90 Mins.	Mins.
123 Mins.	Mins.

*Shut in pressure did not reach static reservoir pressure.

Clock Travel ______ inches per min.

PRESSURE INCREMENTS

Point Minutes	Pressure	$\frac{T+\Delta t}{\Delta t}$	Point Minutes	Pressure	$\frac{T+\Delta t}{\Delta t}$	Point Minutes	Pressure	$\frac{T+\Delta t}{\Delta t}$

JOHNSTON ...found a better way

SURFACE INFORMATION

Description (Rate of Flow)	Time	Pressure (P.S.I.G.)	Surface Choke
Opened Tool	1740	-	-
STRONG BLOW			
CLOSED FOR INITIAL SHUT-IN	1756	-	-
BURNABLE GAS TO SURFACE	1801	-	-
FINISHED SHUT-IN	1842	-	-
RE-OPENED TOOL	1847	-	-
MEDIUM BLOW			
GAS 3.92 MCF/DAY	1902	2	1/8"
GAS 4.84 MCF/DAY	2015	3	"
CLOSED FOR FINAL SHUT-IN	2017	-	"
PULLED PACKER LOOSE	2220	-	-

Cushion Type	Amount	Pressure	Bottom Choke Size
	-		3/4"

MUD DATA

Mud Type: FRESH WATER AND GEL Wt.: 9.4
Viscosity: 45 Water Loss: 8.4 C.C.
Resist: of Mud .60 @ 60 °F; of Filtrate .85 @ 60 °F
Chloride Content: 500 PPM

EQUIPMENT & HOLE DATA

Type Test: M. F. E. SELECTIVE ZONE STRADDLE
Formation Tested: CEDAR MOUNTAIN / OPEN HOLE
Elevation: 5968 Ft.
Net Productive Interval: 18 Ft.
Estimated Porosity: 10 %
All Depths Measured From: KELLY BUSHING
Total Depth: 4620 Ft.
Main Hole/Casing Size: 7 7/8"
Rat Hole/Liner Size: -
Drill Collar Length: 418' I.D. 2.5"
Drill Pipe Length: 2860' I.D. 2.764"
Packer Depth(s): 3308, 3315, 3355 Ft.

MULTI-FLOW EVALUATOR FLUID SAMPLE DATA

Sampler Pressure: 240 P.S.I.G. at Surface
Recovery: Cu. Ft. Gas: .50
cc. Oil: -
cc. Water: 1800
cc. Mud: -
Tot. Liquid cc.: 1800
Gravity: - °API @ - °F.
Gas/Oil Ratio: - cu. ft./bbl.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	.24 @ 60 °F.	1500 ppm
Recovery Mud	- @ - °F.	
Recovery Mud Filtrate	- @ - °F.	- ppm
Mud Pit Sample	.60 @ 60 °F.	
Mud Pit Sample Filtrate	.85 @ 60 °F.	500 ppm

RECOVERY DESCRIPTION	FEET	BARRELS	% OIL	% WATER	% OTHERS	API GRAVITY	RESISTIVITY	CHL. PPM
GAS AND WATER CUT MUD	312	2.31				@ °F.	@ °F.	
MUDDY WATER	418	2.55				@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	
						@ °F.	@ °F.	

Remarks:

Address: BOX 548; GRAND JUNCTION, COLORADO 81501

Company: PEASE OIL AND GAS COMPANY Field: WILD CAT
Well: PRICE #2 Location: SE-SW-SEC.3-14S-10E
Test Interval: 3315' TO 3355' Test #: 1 Date: 3-9-74

County: CARBON State: UTAH Field Report No.: 03447 C
Technician: GUFFEY (VERNAL) Test Approved By: MR. W. DON QUIGLEY No. Reports Requested: 6 (5x's)

FORM 8

STATE OF UTAH

DIVISION OF OIL, GAS AND MINING

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. LEASE DESIGNATION AND SERIAL NO.: ML 45805

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☐ Other Salt Water Disposal

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Anadarko Petroleum Corporation

8. FARM OR LEASE NAME: Helper State

3. ADDRESS OF OPERATOR: 17001 Northchase Dr., Houston, Texas 77060

9. WELL NO.: SWD #1

4. LOCATION OF WELL *(Report location clearly and in accordance with any State requirements)*
At surface FSL
1131' ~~FEL~~ & 2194' FWL
At top prod. interval reported below
Same
At total depth
Same

10. FIELD AND POOL, OR WILDCAT: Helper CBM

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW/4, Sec. 3, T14S, 10E

14. API NO.	DATE ISSUED	12. COUNTY	13. STATE
43-007-30361	08/25/97	Carbon	UT

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.) or (Plug & Abd.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)	19. ELEV. CASINGHEAD
09/26/97	10/24/97	11/15/97	5965' G.L.	5965' G.L.

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
6489'	N/A	N/A	→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)
N/A NAVAJO

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN
CBL, Micro Log, CNLD, GR, AIL 12-9-97

27. Was Well Cored YES ☐ NO ☒ *(Submit analysis)*
Drill System Test YES ☐ NO ☒ *(See reverse side)*

28. CASING RECORD *(Report all strings set in well)*

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	319'	17 1/2"	360 sxs	None
8 5/8"	24#	1264'	12 1/4"	360 sxs	None
5 1/2"	17#	6489'	7 7/8"	870 sxs	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD *(Interval, size and number)*
5920'-6090', 680
6112'-6154', 168
6256'-6320', 256
4 SPF w/ 0.37 EHD

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.
DEPTH INTERVAL (MD) | AMOUNT AND KIND OF MATERIAL USED

RECEIVED
DEC 19 1997
DIV. OF OIL, GAS & MINING

33. PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD *(Flowing, gas lift, pumping - size and type of pump)*	WELL STATUS *(Producing or shut-in)*
N/A		water disposal

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL - BBL.	GAS - MCF.	WATER - BBL.	GAS - OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL - BBL.	GAS - MCF.	WATER - BBL.	OIL GRAVITY - API (CORR.)

34. DISPOSITION OF GAS *(Sold, used for fuel, vented, etc.)*

TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Wellbore Diagram, Logs

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED [signature] TITLE Shad Frazier Engineer DATE 12/17/97

See Spaces for Additional Data on Reverse Side

INSTRUCTIONS

This form should be completed in compliance with the Utah Oil and Gas Conservation General Rules. If not filed prior to this time, all logs, tests, and directional surveys as required by Utah Rules should be attached and submitted with this report.

ITEM 18: Indicate which elevation is used as reference for depth measurements given in other spaces on this form and on any attachment.
ITEMS 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in iten 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.
ITEM 29: "Sacks Cement": Attached supplemental records for this well should show the details for any multiple stage cementing and the location of the cementing tool.
ITEM 33: Submit a separate completion report on this form for each interval to be separately produced (see instruction for items 22 and 24 above).

37. SUMMARY OF POROUS ZONES:
Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries).

Formation	Top	Bottom	Description, contents, etc.
Ferron Sand	2028'	2078'	
Ferron Coal	2078'	2182'	
Lower Ferron Sand	2182'	2246'	
Tununk Shale	2246'		
Navajo	5870'	6155'	
Kyenta	6155'	6256'	
Wingate	6256'	6489'	

38. GEOLOGIC MARKERS

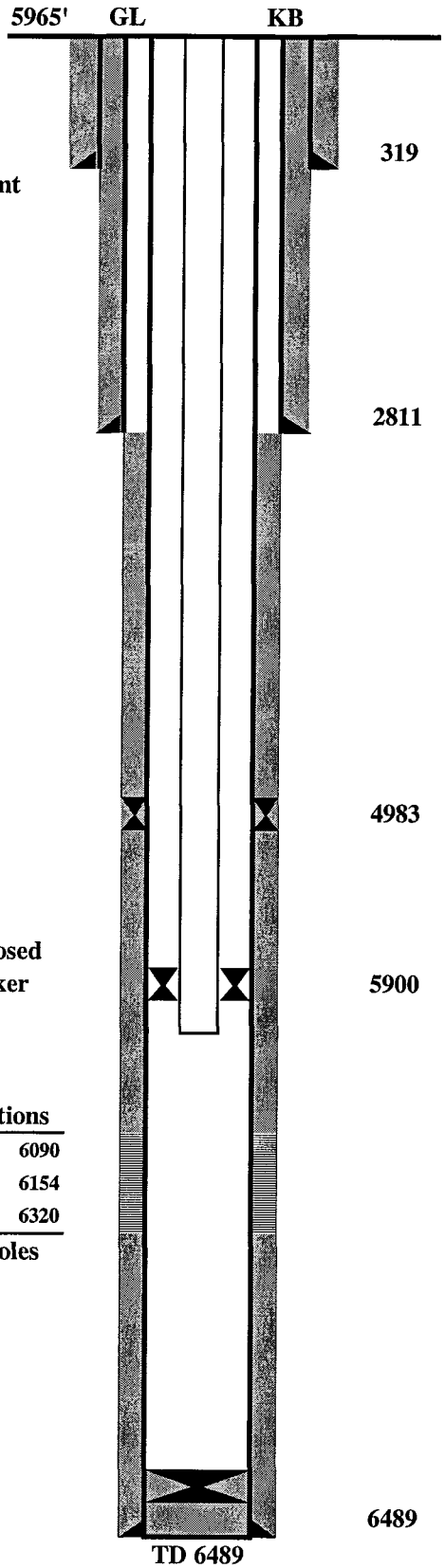
Name	Top	
	Meas. Depth	True Vert. Depth
Ferron Sand	2028'	
Ferron Coal	2078'	
Lower Ferron Sand	2182'	
Tununk Shale	2246'	
Navajo	5870'	
Kyenta	6155'	
Wingate	6256'	

Helper State SWD #1

1131' FSL & 2194' FWL Sec 3-T14S-R10E

Carbon County, Utah

	SPUD	RIG OFF
SURFACE	9/26/97	10/27/97
PRODUCTION	11/5/97	



(Holes)	Perforations	
(280)	5920 -	6090
(168)	6112 -	6154
(256)	6256 -	6320
(704)	Total Holes	

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN	ROD BREAKDOWN

DEVIATION ANGLE		FORMATION	TOP
1264	1 3/4	Morrision	3380
2258	2 3/10		
3946	2 3/4		
4380	2 1/2		

LAST REVISED: 12/18/97

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Carbon,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for 1 (One) consecutive issues, and that the first publication was on the 25th day of December, 1997 and that the last publication of such notice was in the issue of such newspaper dated the 25th day of December, 1997.

Kevin Ashby

Kevin Ashby - Publisher

Subscribed and sworn to before me this 25th day of December, 1997.

Linda Thayn

Notary Public My commission expries January 10, 1999 Residing at Price, Utah

Publication fee, $58.20

NOTARY PUBLIC
LINDA THAYN
511 NORTH 10TH EAST
PRICE, UT 84501
My Commission Expires JAN. 10, 1999
State of Utah

NOTICE OF AGENCY ACTION
CAUSE NO. UIC-201

BEFORE THE DIVISION OF OIL, GAS AND MINING
DEPARTMENT OF NATURAL RESOURCES
STATE OF UTAH

IN THE MATTER OF THE APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR ADMINISTRATIVE APPROVAL OF THE HELPER STATE SWD#1 WELL LOCATED IN SECTION 3, TOWNSHIP 14 SOUTH, RANGE 10 EAST, S.L.M., CARBON COUNTY, UTAH, AS A CLASS II INJECTION WELL

THE STATE OF UTAH TO ALL PERSONS INTERESTED IN THE ABOVE ENTITLED MATTER.

Notice is hereby given that the Division of Oil, Gas and Mining (the "Division") is commencing an informal adjudicative proceeding to consider the application of Anadarko Petroleum Corporation for administrative approval of the Helper State SWD #1 well, located in Section 3, Township 14 South, Range 10 East, S.L.M., Carbon County, Utah, for conversion to a Class II injection well. The proceeding will be conducted in accordance with Utah Admin. R.649-10, Administrative Procedures.

The interval from 5920 feet to 6320 feet (Navajo and Wingate Formations) will be selectively perforated for water injection. The maximum injection pressure will be limited to 640 psig.

Any person desiring to object to the application or otherwise intervene in the proceeding, must file a written protect or notice of intervention with the Division within fifteen days following publication of this notice. If such a protest of intervention is received, a hearing will be scheduled before the Board of Oil, Gas and Mining. Protestants and/or intervenors should be prepared to demonstrate at the hearing how this matter affects their interests.

Dated this 18th day of December 1997.

STATE OF UTAH
DIVISION OF OIL, GAS & MINING
-s-John R. Baza, Associate Director

Published in the Sun Advocate December 25, 1997.

143 SOUTH MAIN ST.
P.O.BOX 45838
SALT LAKE CITY, UTAH 84145
FED.TAX I.D.# 87-0217663

Newspaper Agency Corporation
The Salt Lake Tribune NAC DESERET NEWS

CUSTOMER'S COPY

PROOF OF PUBLICATION

CUSTOMER NAME AND ADDRESS	ACCOUNT NUMBER	DATE
DIV OF OIL GAS & MAINING 1594 WEST NORTH TEMPLE, SUITE 1210, BX 145801 SALT LAKE CITY, UT 84114	D5385340L-07	12/25/97

RECEIVED
DEC 29 1997
DIV. OF OIL, GAS & MINING

ACCOUNT NAME	
DIV OF OIL GAS & MAINING	
TELEPHONE	INVOICE NUMBER
801-538-5340	TLCM8200971
SCHEDULE	
START 12/25/97 END 12/25/97	
CUST. REF. NO.	
UIC-201	
CAPTION	
NOTICE OF AGENCY ACTIONCAUSE N	
SIZE	
71 LINES 1.00 COLUMN	
TIMES	RATE
1	1.64
MISC. CHARGES	AD CHARGES
.00	116.44
	TOTAL COST
	116.44

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STATE OF UTAH
DIV. OF OIL, GAS AND MINING
/s/ John R. Baza
Associate Director
CM820090

G&D 8 SUB08 01G

AFFIDAVIT OF PUBLICATION

EWSPAPER AGENCY CORPORATION LEGAL BOOKKEEPER, I CERTIFY THAT THE ATTACHED
TISEMENT OF NOTICE OF AGENCY ACTIONCAUSE N FOR
OF OIL GAS & MAINING WAS PUBLISHED BY THE NEWSPAPER AGENCY
RATION, AGENT FOR THE SALT LAKE TRIBUNE AND DESERET NEWS,DAILY NEWSPAPERS
ED IN THE ENGLISH LANGUAGE WITH GENERAL CIRCULATION IN UTAH,AND PUBLISHED
LT LAKE CITY, SALT LAKE COUNTY IN THE STATE OF UTAH.

SHED ON START 12/25/97 END 12/25/97

URE Joanne Mooney

12/25/97

NOTARY PUBLIC
JOANNE MOONEY
2628 Hartford St.
Salt Lake City, UT 84109
My Commission Expires
March 31, 2000
STATE OF UTAH

THIS IS NOT A STATEMENT BUT A "PROOF OF PUBLICATION"
PLEASE PAY FROM BILLING STATEMENT.

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

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Notary Public My commission expires January 10, 1999 Residing at Price, Utah

Publication fee, $58.20

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LINDA THAYN
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PRICE, UT 84501
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State of Utah

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STATE OF UTAH
DIVISION OF OIL, GAS & MINING
-s-John R. Baza, Associate Director

Published in the Sun Advocate December 25, 1997.

Sun Advocate

Tuesday & Thursday Publication

P.O. Box 870 - Price, Utah 84501
(801)637-0732

Division of Oil, Gas & Mining-#7
PO Box 145801
Salt Lake City, Ut 84114-5801

STATEMENT

December 1997

Charges This Month:	Amount

Legal-Agency Action - Cause No. UIC-201
December 25, 1997 ..... $58.20

Fund	Agency	Low Org	Approp Unit	Object	Mine Activity	Grant Category	Project
100	560	2871	REC	6131		GED 8	JUAD 8016

Total Amount Due $58.20

This amount is due by the 15th day of the next month. The rate of 2% per month (21% Annual Percentage Rate) will be charged on all accounts 30 days or more past due.

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

January 13, 1998

Anadarko Petroleum Corporation
17001 Northchase Drive
Houston, Texas 77251-1330

Re: Helper State SWD # 1, Section 3, Township 14 South, Range 10 East, Carbon County, Utah

Gentlemen:

Pursuant to Utah Admin. Code R649-5-3-3, the Division of Oil, Gas and Mining (the "Division") issues its administrative approval for conversion of the referenced well to a Class II injection well. Accordingly, the following stipulations shall apply for full compliance with this approval:

1. Compliance with all applicable requirements for the operation, maintenance and reporting for Underground Injection Control ("UIC") Class II injection wells pursuant to Utah Admin. Code R649-1 et seq.

2. Conformance with all conditions and requirements of the complete application submitted by Anadarko Petroleum Corporation.

3. Conduct a pressure test for mechanical integrity prior to injection.

If you have any questions regarding this approval or the necessary requirements, please contact Dan Jarvis at this office.

Sincerely,

John R. Baza
Associate Director, Oil and Gas

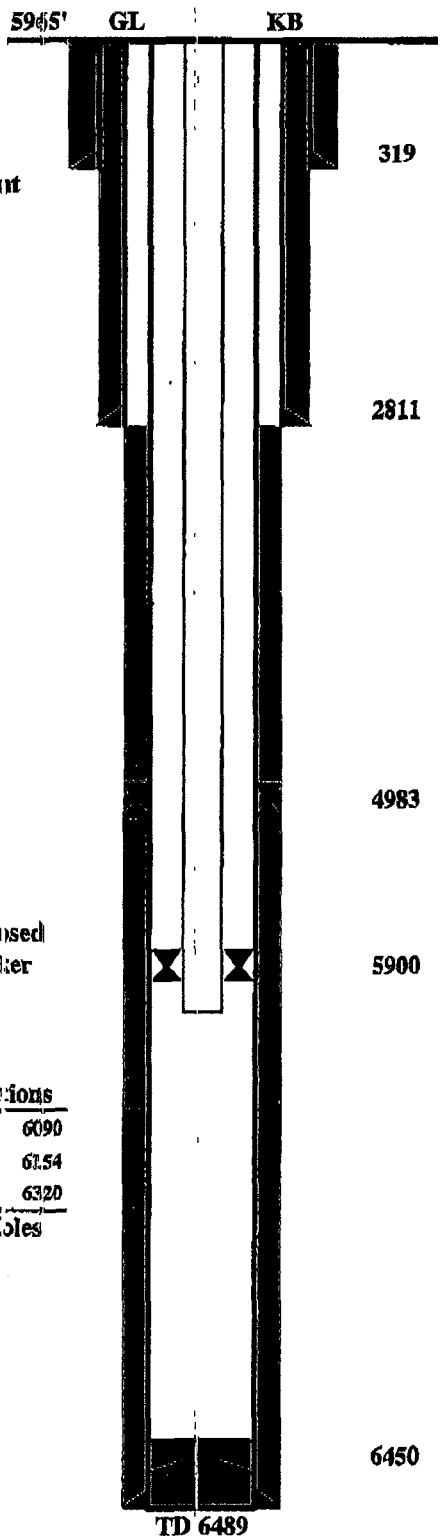
cc: Dan Jackson, Environmental Protection Agency
Bureau of Land Management, Price
Ed Bonner, SITLA
Carbon County Commission

Helper State SWD #1

1131' FSL & 2194' FWL Sec 3-T14S-R10E

Carbon County, Utah

	SPUD	RIG OFF
SURFACE	09/26/1997	10/27/1997
PRODUCTION	11/05/1997	



(Holes)	Perforations	
(280)	5920 -	6090
(168)	6112 -	6154
(256)	6256 -	6320
(704)	Total Holes	

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN	ROD BREAKDOWN

DEVIATION ANGLE		FORMATION	TOP
1264	1 3/4	Morrision	3380
2258	2 3/10		
3946	2 3/4		
4380	2 1/2		

LAST REVISED: 01/02/1998

P.01

TRANSACTION REPORT

JAN-23-98 FRI 01:16 PM

SEND(M)

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
JAN-23	01:14 PM	14356377937	1'48"	3	SEND	(M) OK	178	

TOTAL 1M 48S PAGES: 3

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt, Governor
Ted Stewart, Executive Director
James W. Carter, Division Director

1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

FACSIMILE COVER SHEET

DATE: 1-23-98

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 3

TO: Mark Page - DWR Rights

FAX NUMBER: 435-637-7937

FROM: D. Jarvis

DIVISION OF OIL, GAS AND MINING

PHONE: (801) 538-5340

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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FAX NUMBER: 435-637-7937

FROM: D. Jarvis
DIVISION OF OIL, GAS AND MINING

PHONE: (801) 538-5340
FAX: (801) 359-3940

SUBJECT: #

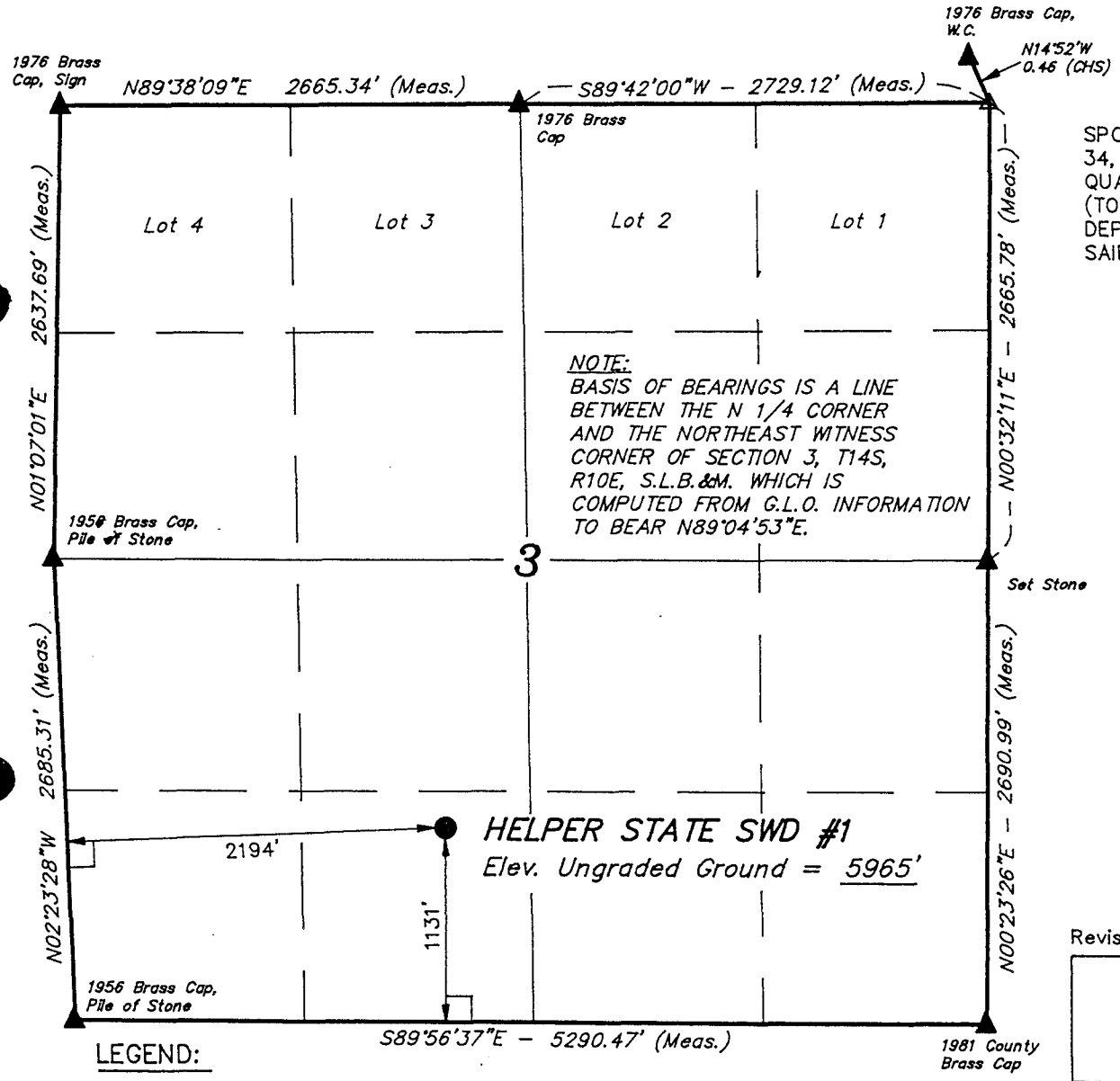
REMARKS: If you need anything else let me know.
Dan.

Should you encounter any problems with this copy, or do not receive all the pages, please call

ANADARKO PETROLEUM CORP.

Well location, HELPER STATE SWD #1, located as shown in the SE 1/4 SW 1/4 of Section 3, T14S, R10E, S.L.B.&M. Carbon County, Utah

T14S, R10E, S.L.B.&M.

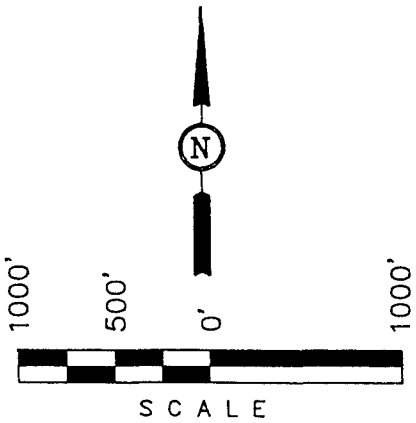


LEGEND:

- └ = 90° SYMBOL
- ● = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.
- △ = TRUE POSITION OF CORNER.

BASIS OF ELEVATION

SPOT ELEVATION NEAR THE SOUTHEAST CORNER OF SECTION 34, T13S, R10E, S.L.B.&M. TAKEN FROM THE HELPER QUADRANGLE, UTAH, CARBON COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 6350 FEET.



CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Robert L. Kay

REGISTERED LAND SURVEYOR
REGISTRATION NO. 161319
STATE OF UTAH

STATE OF UTAH

Revised: 10-16-96 C.B.T.

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST - VERNAL, UTAH 84078
(801) 789-1017

SCALE: 1" = 1000'	DATE SURVEYED: 9-18-96	DATE DRAWN: 9-23-96
PARTY: D.K. B.G. C.B.T.	REFERENCES: G.L.O. PLAT	
WEATHER: COOL	FILE: ANADARKO PETROLEUM CORP.	

P.01

TRANSACTION REPORT

JAN-23-98 FRI 12:51 PM

SEND(M)

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
JAN-23	12:49 PM	14356363210	1'19"	2	SEND	(M) OK	173	

TOTAL 1M 19S PAGES: 2

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor

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James W. Carter
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1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

FACSIMILE COVER SHEET

DATE: 1-23-98

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 2

TO: Cindy Lou McDonald

FAX NUMBER: 435-636-3210

FROM: DIVISION OF OIL, GAS AND MINING

PHONE: (801) 538-5340

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor

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Executive Director

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FACSIMILE COVER SHEET

DATE: 1-23-98

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 2

TO: Cindy Lou McDonald

FAX NUMBER: 435-636-3210

FROM: DIVISION OF OIL, GAS AND MINING

PHONE: (801) 538-5340
FAX: (801) 359-3940

SUBJECT:

REMARKS:

Should you encounter any problems with this copy, or do not receive all the pages, please call

Anadarko
Petroleum Corporation

Completion Procedure

Helper State SWD #1 **AFE: 16462**
Sec. 3-14S-10E (1131' FSL & 2194' FWL) **WI: 100%**
Carbon County, Utah

PURPOSE: SET AND TEST TUBING AND PACKER IN WELL

KB-GL: 14'
TD: 6480'
PBTD: 6480
Surf: 13 3/8" 36# @ 319
Inter: 8-5/8", 24# K-55 @ 2811'
Prod: 5-1/2", 17# N-80 @ 6480' (Drift = 4.767")
Tubing: 2 7/8" (Nominal ID 2.20") Douline-10 internally coated
Paker: Baker Model "A-3" Lok-Set retrievable casing packer internally and externally coated

Tubing: Rice Duoline - Charles James - (281)-847-5444 or 800-984-8880
Packer : Baker - Tony Jeane (435)-789-5918
Trucking: McClatchy Brothers, 800-234-4648
Pradon Trucking, 800-336-1682

Procedure:
Please see attached sheet for handling specifications and pass on to all personnel that will handle tubing

1. Contact Douline field representative and schedule job date. Contact tubing trucking company (field choice) and schedule pick up and delivery of tubulars. Contact Baker for tool delivery. Schedule everyone to meet and deliver goods so pipe does not sit overnight in yard for more than one day. Contact the Department of Oil Gas and Mining to ask for office inspection of packer integrity test.

2. MIRUPU, NDWH, NUBOP.

3. TIH W/ Baker LOK-SET retrievable packer w/ 1.87" stainless steel profile nipple and stainless steel on-off sealing connector (Prod No. 684-15) & 2 7/8" DOULINE -10 tubing. Rice/ Douline Technician to be location to run tubing.

4. Set packer at 5880' +/-. Slack off tubing to 6000 lb. and right turn. Then, 10,000 to 12,000 of upstrain will engage the lower slips, set down 6000 to 10000 to lock-in and pack-off. Do not overturn packer due to excessive turning can lead to compression ring failure.

5. Set plug in profile nipple on sand line. Sting out of on-off tool. Test packer and casing to 500# for 5 min.

6. Circulate 100 bbls of packer fluid. Packer fluid to contain 1 bbls of Cortron R-2383 and 99 bbls of 2% KCl water.

7. Sting into on-off tool and test annulus to 500# for 30 min with chart. Fish plug in profile.

8. NDBOP, RUWH, RDMOPU, Connect WH to disposal line. Begin disposal under permit requirements.

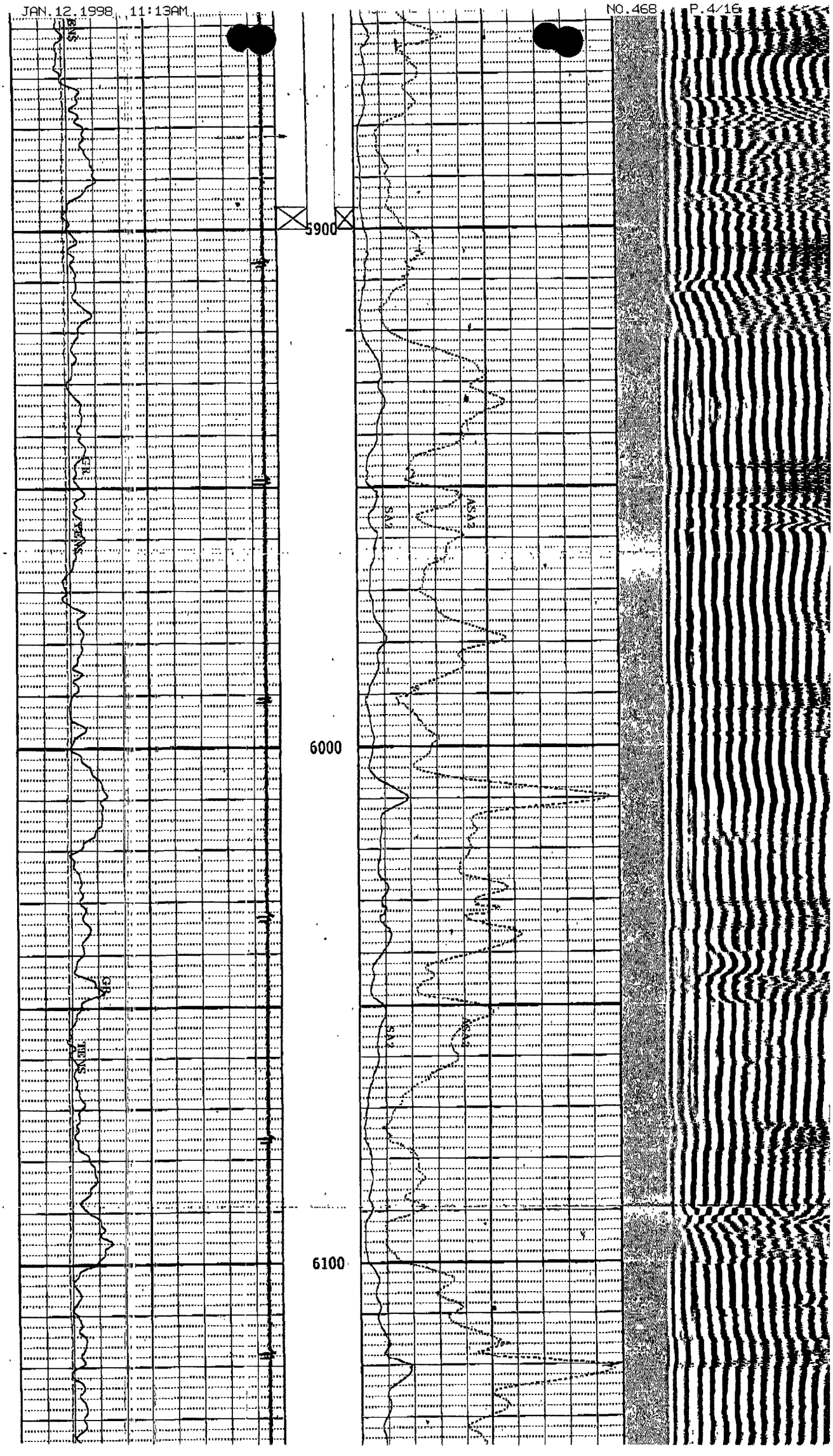
9. Report daily injection [redacted]mes, tubing pressures and casing pressures [redacted]ouston in production report

Prepared: Shad Frazier 1/9/98

Approved: Michael O'Hanlon 1/12/98

Helper State SWD #1 tubing.doc

CC: Steve Pearson
Mike Bridges
Kendall Madden
Steve Ruhl
John Broman
Tom Rushing
Shad Frazier
WF - Helper State SWD #1 Carbon county, Utah.
RF - SMF


5900
6000
6100
SNS
GR
SA1
SA2

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

December 18, 1997

Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84414-5801

Re: Helper State SWD #1
SW/4 Sec. 3, T14S, R10E
Carbon County, Utah

Gentlemen:

Please find enclosed, in triplicate, the Well Completion Report (Form 8) for the above referenced well. Also enclosed are copies of the wellbore diagrams and open hole logs.

Please hold the logs confidential for a period of two years. Should you require any additional information, please contact me at (281) 873-1276.

Best regards,

ANADARKO PETROLEUM CORPORATION

Gail A. Rupert
Engineering Technician

Enclosures

cc: Bureau of Land Management
Moab District Office
P.O. Box 970
Moab, Utah 84532

Bureau of Land Management
Price River Resources Area
900 North, 700 East
Price, Utah 84501

GAR
TRC
SMF

FORM 8

STATE OF UTAH

DIVISION OF OIL, GAS AND MINING

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. LEASE DESIGNATION AND SERIAL NO.: ML 45805

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☐ Other Salt Water Disposal

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Anadarko Petroleum Corporation

8. FARM OR LEASE NAME: Helper State

3. ADDRESS OF OPERATOR: 17001 Northchase Dr., Houston, Texas 77060

9. WELL NO.: SWD #1

4. LOCATION OF WELL *(Report location clearly and in accordance with any State requirements)*
At surface: 1131' FEL & 2194' FWL
At top prod. interval reported below: Same
At total depth: Same

10. FIELD AND POOL, OR WILDCAT: Helper CBM

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW/4, Sec. 3, T14S, 10E

14. API NO.	DATE ISSUED	12. COUNTY	13. STATE
43-007-30361	08/25/97	Carbon	UT

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.) or (Plug & Abd.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)	19. ELEV. CASINGHEAD
09/26/97	10/24/97	11/15/97	5965' G.L.	5965' G.L.

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
6489'	N/A	N/A	→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD): N/A

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: CBL, Micro Log, CNLD, GR, AIL

27. Was Well Cored YES ☐ NO ☒ *(Submit analysis)*
Drill System Test YES ☐ NO ☒ *(See reverse side)*

28. CASING RECORD *(Report all strings set in well)*

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	319'	17 1/2"	360 sxs	None
8 5/8"	24#	1264'	12 1/4"	360 sxs	None
5 1/2"	17#	6489'	7 7/8"	870 sxs	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD *(Interval, size and number)*
5920'-6090', 680
6112'-6154', 168
6256'-6320', 256
4 SPF w/ 0.37 EHD

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33. PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD *(Flowing, gas lift, pumping - size and type of pump)*	WELL STATUS *(Producing or shut-in)*
N/A		

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL - BBL.	GAS - MCF.	WATER - BBL.	GAS - OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL - BBL.	GAS - MCF.	WATER - BBL.	OIL GRAVITY - API (CORR.)

34. DISPOSITION OF GAS *(Sold, used for fuel, vented, etc.)*

TEST WITNESSED BY

35. LIST OF ATTACHMENTS: Wellbore Diagram, Logs

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED [signature] TITLE Shad Frazier Engineer DATE 12/17/97

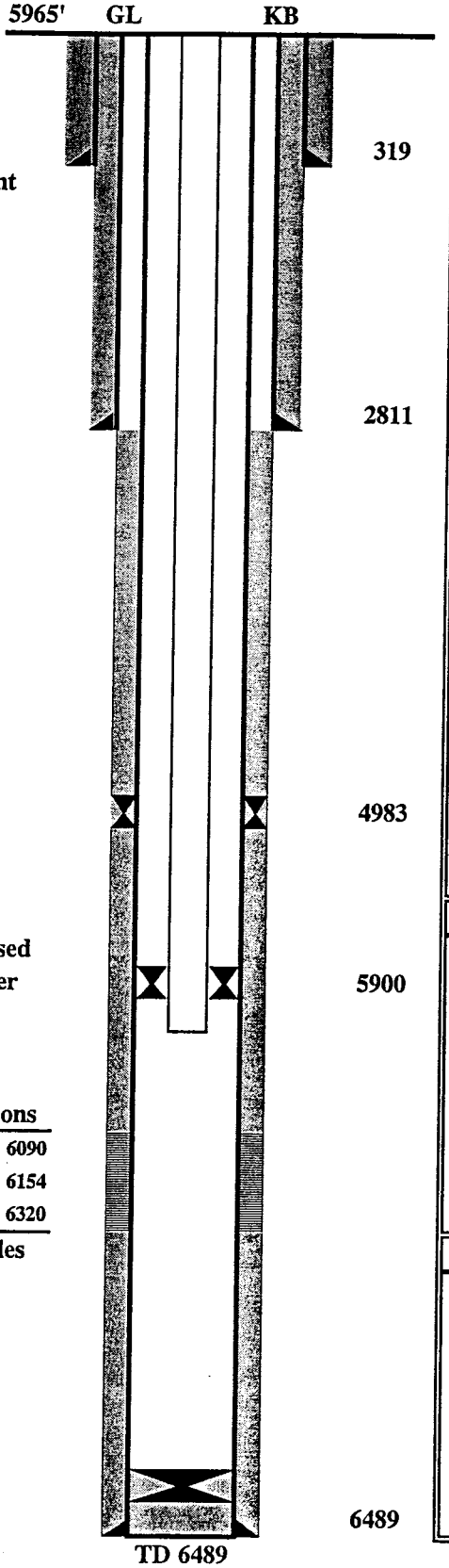
See Spaces for Additional Data on Reverse Side

Helper State SWD #1

1131' FSL & 2194' FWL Sec 3-T14S-R10E

Carbon County, Utah

	SPUD	RIG OFF
SURFACE	9/26/97	10/27/97
PRODUCTION	11/5/97	



17 1/2" Hole
13 3/8" 48#
Set w/ 360 sxs cmt

12 1/4" Hole
8 5/8" 24# K-55
360 sxs cmt

DV Tool

Proposed
Packer

(Holes)	Perforations	
(280)	5920 -	6090
(168)	6112 -	6154
(256)	6256 -	6320
(704)	Total Holes	

Hole Size 7 7/8"
5 1/2" 17# N-80
870 sxs cmt

WELL WORK HISTORY

NOTES:

TUBING BREAKDOWN	ROD BREAKDOWN

DEVIATION ANGLE		FORMATION	TOP
1264	1 3/4	Morrision	3380
2258	2 3/10		
3946	2 3/4		
4380	2 1/2		

LAST REVISED: 12/18/97

Anadarko Petroleum

Helper State SWD #1

Initial Pressure Test

Post Treatment Summary

Section 3

Township 14S

Range 10E

Casing Integrity Test

Treatment Date: Nov. 5, 1997

Customer: ANADARKO
Well Desc.: HELPER STATE SWD #1
Formation: PRESSURE TEST

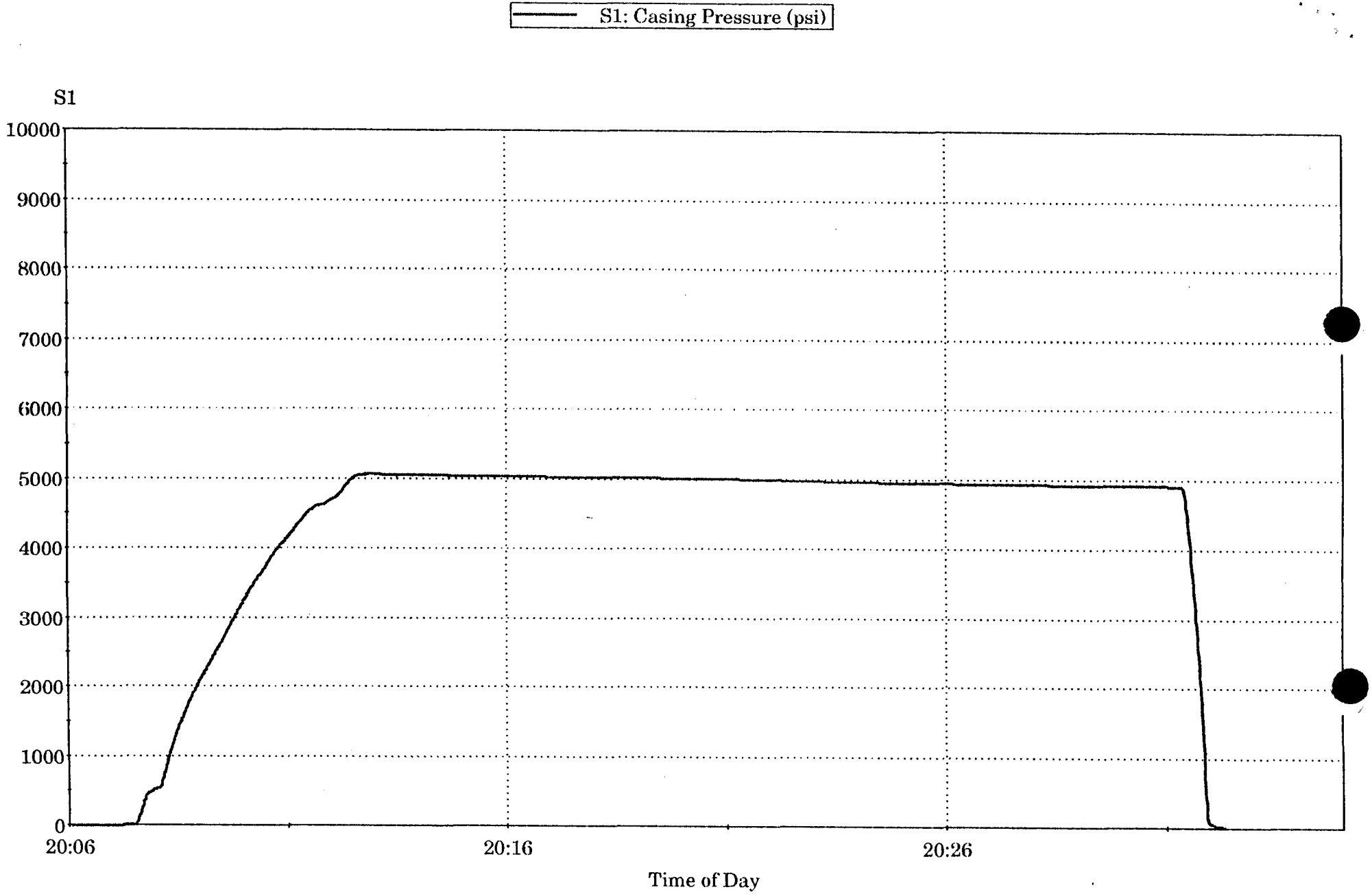
Date: Wednesday November 05, 1997
Ticket #: 110597
Job Type: PRESSURE TEST

Time of Day	Stage	Casing Pressure
Unknown		psi
20:06:03	0	0
20:06:23	0	0
20:06:43	0	4
20:07:03	0	4
20:07:23	0	12
20:07:43	0	370
20:08:03	0	548
20:08:23	0	1226
20:08:43	0	1746
20:09:03	0	2165
20:09:23	0	2549
20:09:43	0	2948
20:10:03	0	3317
20:10:23	0	3641
20:10:43	0	3948
20:11:03	0	4200
20:11:23	0	4456
20:11:43	0	4619
20:12:03	0	4716
20:12:23	0	4943
20:12:43	0	5056
20:13:03	0	5062
20:13:23	0	5058
20:13:43	0	5055
20:14:03	0	5052
20:14:23	0	5048
20:14:43	0	5045
20:15:03	0	5044
20:15:23	0	5041
20:15:43	0	5039
20:16:03	0	5036
20:16:23	0	5034
20:16:43	0	5032
20:17:03	0	5030
20:17:23	0	5028
20:17:43	0	5026
20:18:03	0	5025
20:18:23	0	5022
20:18:43	0	5020
20:19:03	0	5018
20:19:23	0	5016
20:19:43	0	5015
20:20:03	0	5013
20:20:23	0	5011
20:20:43	0	5007

Customer: ANADARKO
Well Desc.: HELPER STATE SWD #1
Formation: PRESSURE TEST

Date: Wednesday November 05, 1997
Ticket #: 110597
Job Type: PRESSURE TEST

Time of Day	Stage	Casing Pressure
Unknown		psi
20:21:03	0	5004
20:21:23	0	4999
20:21:43	0	4995
20:22:03	0	4988
20:22:23	0	4982
20:22:43	0	4977
20:23:03	0	4972
20:23:23	0	4967
20:23:43	0	4963
20:24:03	0	4959
20:24:23	0	4956
20:24:43	0	4951
20:25:03	0	4948
20:25:23	0	4945
20:25:43	0	4943
20:26:03	0	4940
20:26:23	0	4938
20:26:43	0	4935
20:27:03	0	4932
20:27:23	0	4930
20:27:43	0	4928
20:28:03	0	4926
20:28:23	0	4924
20:28:43	0	4922
20:29:03	0	4919
20:29:23	0	4917
20:29:43	0	4916
20:30:03	0	4914
20:30:23	0	4911
20:30:43	0	4909
20:31:03	0	4908
20:31:23	0	4837
20:31:43	0	2596
20:32:03	0	45
20:32:23	0	16
20:32:43	0	10
20:33:03	0	9
20:33:23	0	9
20:33:43	0	9
18:39:12		9



CUSTOMER: ANADARKO		TICKET: 110597	DATE: Wed 05-Nov-97
WELL DESC: HELPER STATE SWD #1		FORMATION: PRESSURE TEST	

DIVISION OF OIL, GAS AND MINING
UNDERGROUND INJECTION CONTROL PROGRAM

PERMIT
STATEMENT OF BASIS

Applicant: Anadarko Petroleum Corp. **Well:** Helper State SWD #1

Location: Sec. 3, T14S, R10E, Carbon County **API:** 43-007-30361

Ownership Issues:

The well is located on lands administered by the Utah School Institutional Trust Lands Administration. (SITLA) Mineral ownership is held by the same. All lands and minerals in the one-half mile radius arae administered by the same. Anadarko is the lessee of all minerals. SITLA was given proper notice as part of there lease agreement.

Well Integrity:

Surface casing was set at 319 feet and was cemented to surface. An 8 5/8 inch intermediate casing was set at 2811 feet and was also cemented to surface. A 5 ½ inch production casing was set at 6489 feet and cemented in two stages. The DV tool was set at 4983 feet. A cement bond log was run and indicates good bond from total depth up to the DV tool and good bond from the tool up to 3100 feet. This should be adequate to prevent any upward migration of fluid between the 5 ½" casing and the borehole wall. This completion will also adequately isolate the Ferron gas zone from any potential water zones. A 2 7/8" tubing string was run in the well and packer set at 5890 feet. A casing-tubing annular pressure test will be required prior to commencement of injection.

Ground Water Protection:

High quality ground water in the vicinity of the subject well is apparently very scarce. Any which does exist is probably in surficial deposits of pediment gravels or colluvium along stream valleys and of very limited extent and use. This is reflected in the fact that local communities rely on surface water and spring flow collected in the Wasatch Plateau area. Water contained in subsurface strata in the vicinity is of poor quality, as would be predicted, mostly due to distance from recharge and the presence of evaporites in adjacent and intervening formations. Samples taken from the compressor station which was a composite sample of produced Ferron Sandstone water indicate a total dissolved solids levels of up to 11,000 mg/l. This zone (and coal beds) is also the source of water to be injected.

The quality of water in the Navajo Sandstone at the subject well location ranged from 60,000 mg/l to over 100,000 mg/l total dissolved solids. This was determined via swab samples taken November 12, 1997. The Navajo is a known fresh water aquifer at many locations in the state. In the general San Rafael Swell area, the quality of water in the Navajo is generally of higher quality nearer the outcrop and recharge areas and poorer with increased depth and distance from recharge (DNR Tech. Pub. 78). This premise has been verified with samples taken from the subject well and other wells, in the coalbed methane developement area. The planned injection of Ferron production water into the Navajo at this location will result in dilution of the more saline water contained in the Navajo.

Injection of produced water into the Navajo Sandstone at this location is predicted to have little effect on the overall hydrology of the aquifer because of its great extent compared to the volume of fluid that will likely be injected.

As part of Anadarkos permit, a detailed hydrologic assessment of the area was prepared by the consulting firm of Montgomery Watson. This report details groundwater occurrence, movement, quality and a general geology of the area. The conclusions of the report state that injection into the Navajo will have no adverse affects on groundwater in the vicinity of future potential water production sites.

A step-rate test was conducted on the SWD #1 well in November of 1997, The interval between 5920 and 6320 feet was tested. The fracture gradient was found to be .549 psi/ft. The corresponding maximum surface pressure 690 psi. This fracture gradient corresponds with step-rate information obtained on other disposal wells in the area which are injecting into the same zone. Injection at this pressure should not cause fracturing outside the injection interval. Previous studies on the Navajo SS injection zone at other locations has shown that the anhydrite beds above the injection zone are more plastic and injection into the Navajo above parting pressure will most likely not cause fracturing through the anhydrite.

It is our conclusion after reviewing applicable information including the application submitted by Anadarko, that injection into the Navajo Sandstone at this location would result in some dilution of the saline water present in the aquifer and a pressure increase near the well which would dissipate after injection ceases. No long term negative impacts are anticipated as a result of injection of produced water as proposed into the subject well.

Oil/Gas & Other Mineral Resources Protection:

The Ferron coal/gas zone is protected by tubing, two strings of casing and cement. No other known potentially producible zones were encountered by the well. The injection zone is isolated some 4000 feet below the productive interval.

Bonding:

Anadarko has an $80,000 surety bond in place which provides coverage for this well.

Actions Taken and Further Approvals Needed:

Notice of this application was published in the Salt Lake Tribune, Deseret News, Sun Advocate, and the Emery County Progress. The notice stated the proposed interval 5920 to 6320 feet which covers Navajo, and Wingate Formations. Any future injection into a formation other than the Navajo and Wingate will require administrative approval after appropriate sampling and testing.

A properly designed and constructed disposal or injection well , combined with periodic mechanical integrity tests, poses no threat to fresh or usable groundwater supplies. The Division staff recommends approval of this application pending no additional or unforeseen information presented at the hearing which changes our evaluation.

Reviewer(s): G. Hunt & D. Jarvis Date: 1/7/98

FAX TRANSMITTAL

Anadarko Petroleum Corporation

Houston Division
17001 Northchase Drive
P.O. Box 1330
Houston, Texas 77251-1330

From: Shad Frazier
Engineer

Phone: (281) 873-1227
Fax : (281) 873-1283

Date: 04/27/1998 5:13 PM

To: Dan Jarvis
State Of Utah
Department of Natural Resources
Division of Oil Gas and Mining

Phone: (801) 538-5338
Fax : (801) 359-3940

Message: The following procedure was executed by our field personnel and Halliburton Energy Services on January 16, 1998. The casing & packer integrity test is labeled as step five. The Packer annulus test is labeled as step seven. Please call with any questions regarding this test.

Thank you,

Shad Frazier

NUMBER OF PAGES INCLUDING COVER: 3

SMF

Anadarko
Petroleum Corporation

Completion Procedure

Helper State SWD #1
Sec. 3-14S-10E (1131' FSL & 2194' FWL)
Carbon County, Utah

AFE: 16462
WI: 100%

PURPOSE: SET AND TEST TUBING AND PACKER IN WELL

KB-GL:	**14'**
TD:	**6450'**
PBTD:	**6419**
Surf:	**13 3/8" 36# @ 319**
Inter:	**8-5/8", 24# K-55 @ 2811'**
Prod:	**5-1/2", 17# N-80 @ 6419' (Drift = 4.767")**
Tubing:	**2 7/8" (Nominal ID 2.30") Douline-10 internally coated**
Paker:	**Baker Model "A-3" Lok-Set retrievable casing packer internally and externally coated**

Tubing: Rice Duoline - Charles James - (281)-847-5444 or 800-984-8880
Packer : Baker - Tony Jeane (435)-789-5918
Trucking: McClatchy Brothers, 800-234-4648
Fradon Trucking, 800-336-1682

Procedure:

Please see attached sheet for handling specifications and pass on to all personnel that will handle tubing

1. Contact Douline field representative and schedule job date. Contact tubing trucking company (field choice) and schedule pick up and delivery of tubulars. Contact Baker for tool delivery. Schedule everyone to meet and deliver goods so pipe does not sit overnight in yard for more than one day. Contact the Department of Oil Gas and Mining to ask for office inspection of packer integrity test.

2. MIRUPU, NDWH, NUBOP.

3. TIH W/ Baker LOK-SET retrievable packer w/ 1.87" stainless steel profile nipple and stainless steel on-off sealing connector (Prod No. 684-15) & 2 7/8" DOULINE -10 tubing. Rice/ Douline Technician to be location to run tubing.

4. Set packer at 5880' +/-. Slack off tubing to 6000 lb. and right turn. Then, 10,000 to 12,000 of upstrain will engage the lower slips, set down 6000 to 10000 to lock-in and pack-off. Do not overturn packer due to excessive turning can lead to compression ring failure.

5. Set plug in profile nipple on sand line. Sting out of on-off tool. Test packer and casing to 500# for 5 min.

6. Circulate 100 bbls of packer fluid. Packer fluid to contain 1 bbls of Cortron R-2383 and 99 bbls of 2% KCl water.

7. Sting into on-off tool and test annulus to 500# for 30 min with chart. Fish plug in profile.

8. NDBOP, RUWH, RDMOPU, Connect WH to disposal line. Begin disposal under permit requirements.

9. Report daily injection volumes, tubing pressures and casing pressures to Houston in production report

Prepared: Shad Frazier 11/9/98

Approved: Mike O'Bridges 11/12/98

Helper State SWD#1 tubing.doc

CC: Steve Pearson
Mike Bridges
Kendall Madden
Steve Ruhl
John Broman
Tom Rushing
Shad Frazier
WF - Helper State SWD #1 Carbon county, Utah.
RF - SMF

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

April 27, 1998

Mr. Dan Jarvis
State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple
Suite 1210
Salt Lake City, Utah 84114

Dear Mr. Jarvis:

Per your request, enclosed is a copy of the Casing Integrity Test performed on the Helper SWD #1 well after the packer and tubing were set.

If you should require any additional information or have any questions, please feel free to contact Shad Frazier (281) 873-1227 or myself (281) 873-1276.

Sincerely,

Gail Rupert

ANADARKO PETROLEUM CORPORATION

Gail A. Rupert
Engineering Technician

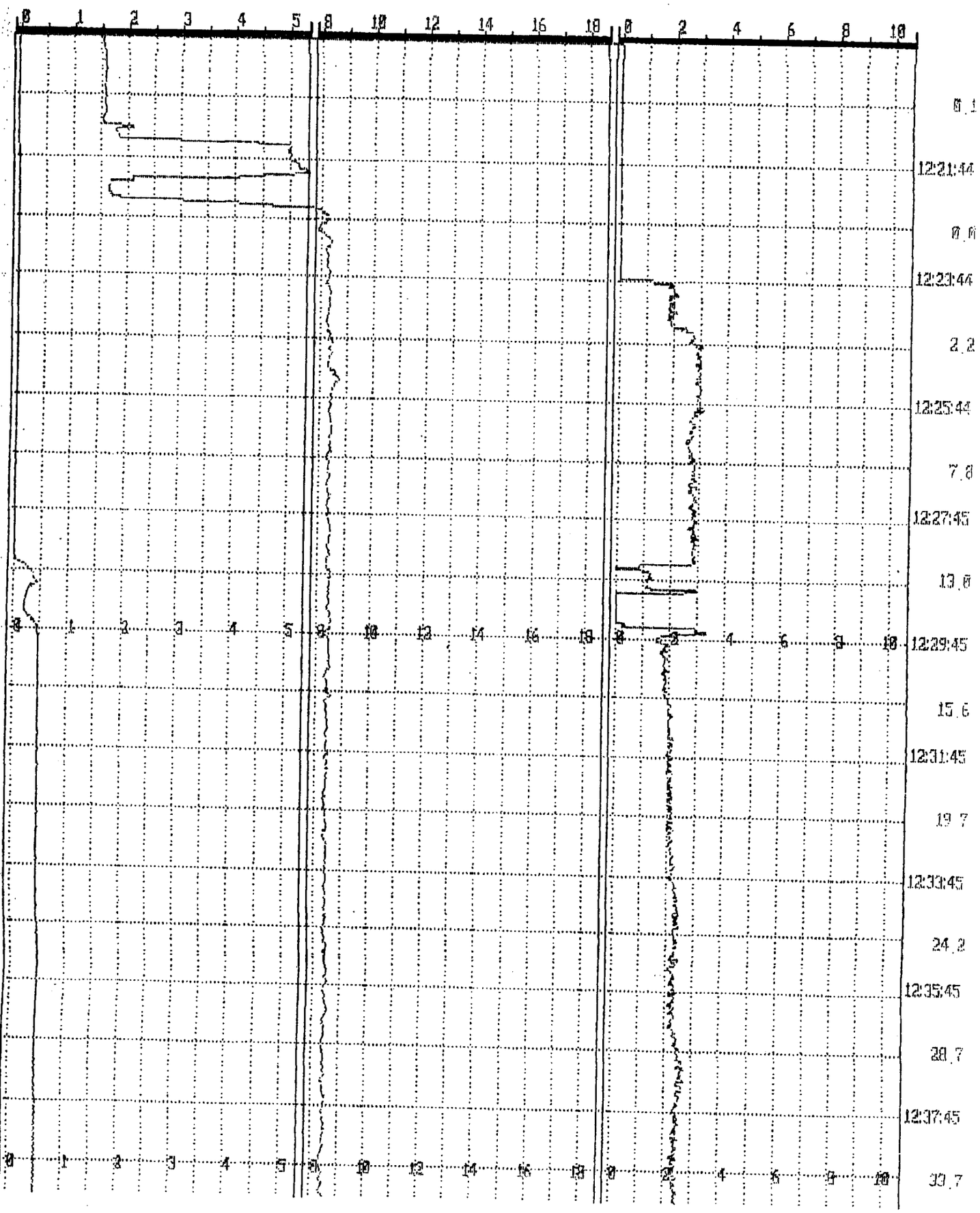
Enclosure

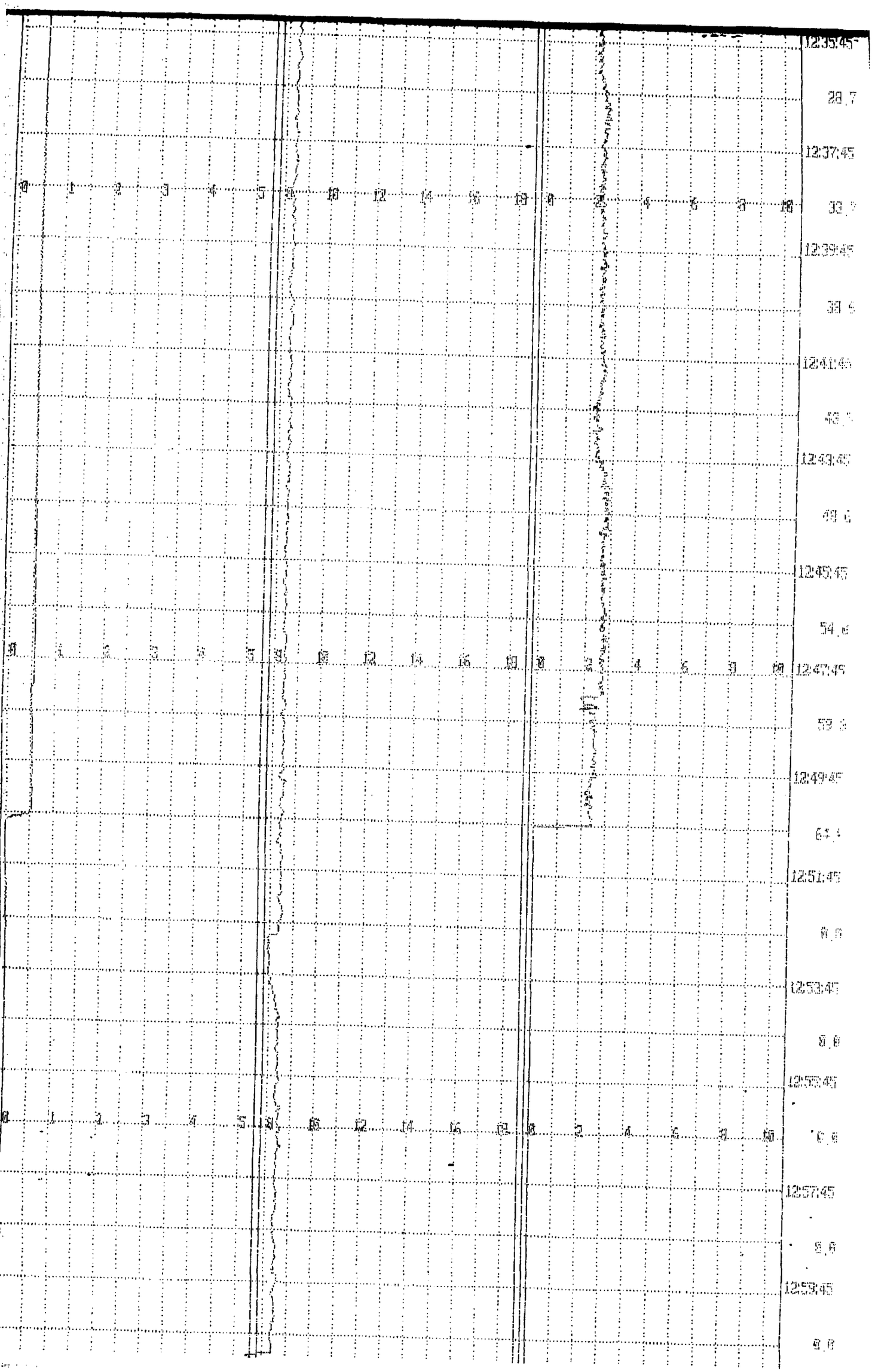
cc: Shad Frazier, Engineer
Well File

UNIPRO II
RUN-TIME STRIP CHART

TIME SCALE: 1 Minute/Division

CHART 1	CHART 2	CHART 3
PRESSURE	DENSITY	RATE
psi x 1000	ppg x 1	bpm x 1

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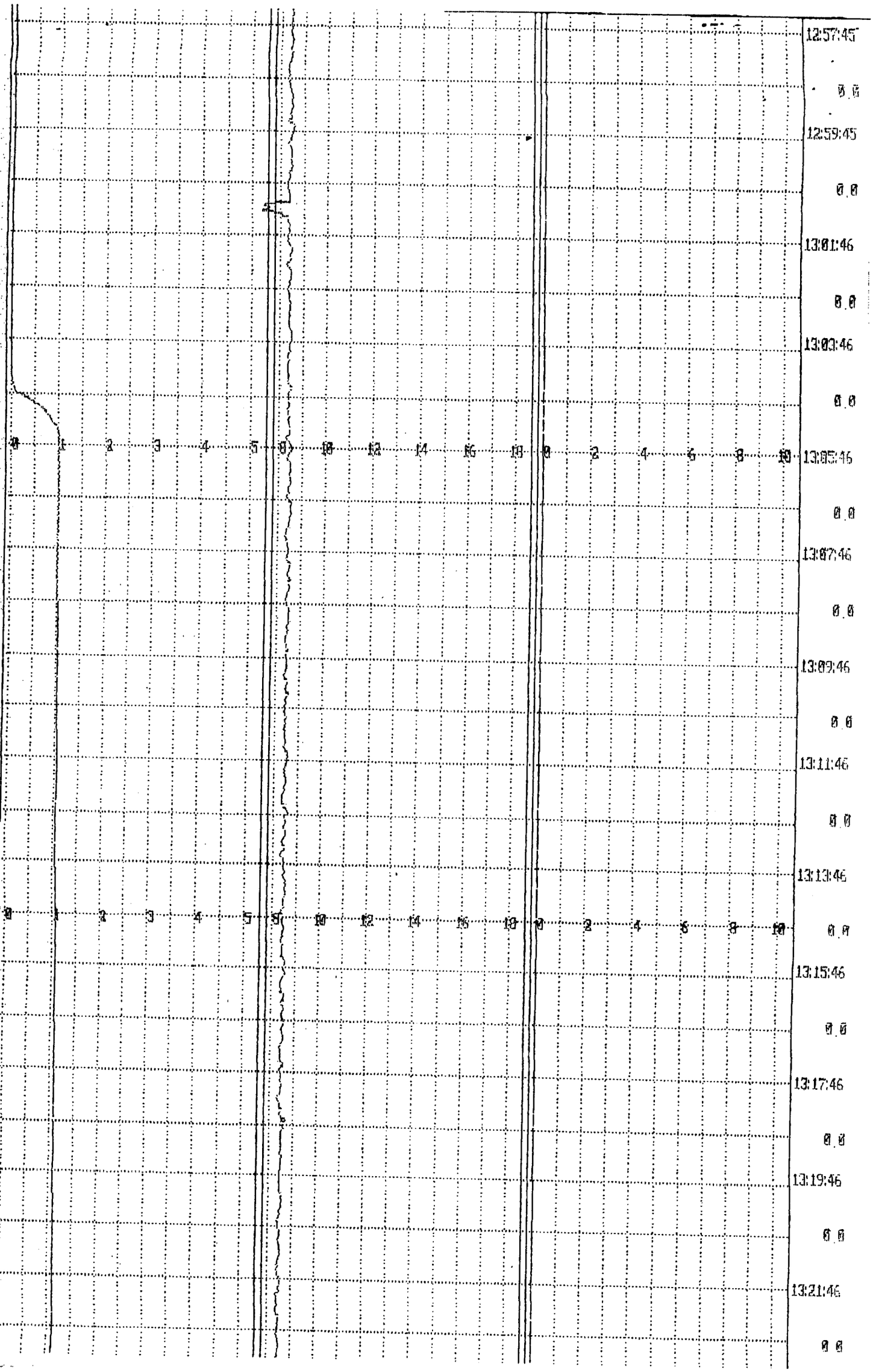
28.7
12:37:45
33.7
12:39:45
38.6
12:41:45
43.5
12:43:45
48.6
12:45:45
54.6
12:47:45
59.6
12:49:45
64.5
12:51:45
0.0
12:53:45
0.0
12:55:45
0.0
12:57:45
0.0
12:59:45
0.0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12:59:45
0.0
13:01:46
0.0
13:03:46
0.0
13:05:46
0.0
13:07:46
0.0
13:09:46
0.0
13:11:46
0.0
13:13:46
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13:15:46
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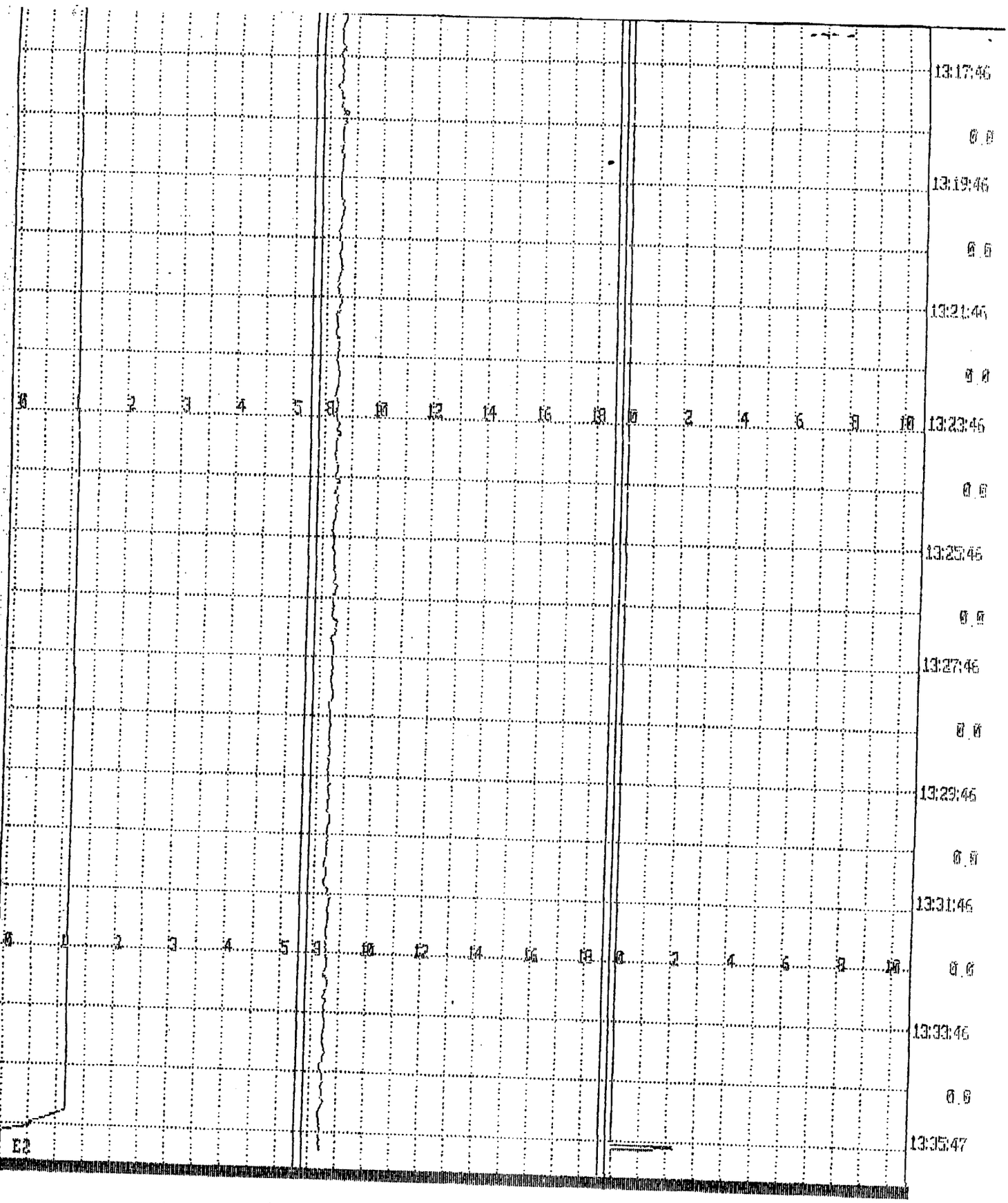
13:19:46
0.0
13:21:46
0.0


13:17:46
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13:19:46
0.0
13:21:46
0.0
13:23:46
0.0
13:25:46
0.0
13:27:46
0.0
13:29:46
0.0
13:31:46
0.0
13:33:46
0.0
13:35:47

JOB SUMMARY:

START TIME 12:19:45 START DATE 1/15/98

EVENT SUMMARY:

EVENT	1	Start Job	=> 12:19:41
EVENT	2	End Job	=> 13:36:06

AVERAGE VALUES:

	Chart 1 (psi)	Chart 2 (ppg)	Chart 3 (bpm)	Chart 4	Chart 5
STAGE 1 ==>	585.08	8.16	0.84		

VOLUMES/TOTALS:

TOTAL 1 == STAGE 1 ==> 0.13 bbl

JOB DURATION 1:16:21

STOP TIME 13:36:06 STOP DATE 1/15/98

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Lowell P. Braxton
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

UNDERGROUND INJECTION CONTROL PERMIT

Cause No. UIC-201

Operator: Anadarko Petroleum Corporation

Wells: Helper State SWD #1

Location: Section 3, Township 14 South, Range 10 East, County: Uintah

API No.: 43-007-30361

Well Type: Water Disposal

Stipulations of Permit Approval

1. Approval for conversion to Injection Well issued on January 13, 1998
2. Maximum Allowable Injection Pressure: 690 psig
3. Maximum Allowable Injection Rate: (restricted by pressure limitation)
4. Injection Interval: 5920 feet to 6320 feet (Navajo and Wingate Formations)

Approved by: John R. Baza

John R. Baza
Associate Director, Oil and Gas

5/12/98
Date

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other Disposal

2. Name of Operator
Anadarko Petroleum Corporation

3. Address and Telephone No.
17001 Northchase Drive Houston, TX 77060

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Section 3 Township 14S Range 10E

5. Lease Designation and Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Helper SWD #1

9. API Well No.
43-00730361

10. Field and Pool, or Exploratory Area

11. County or Parish, State
Carbon County, Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	XXX ☒ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Notice of first injection: January 28, 1998.

(See attached UIC Forms #3 & 6 for January through April 1998.)

RECEIVED
MAY 21 1998
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct

Signed Jan Rupert Title Engineering Technician Date 05/14/98

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

May 18, 1998

Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84414-5801

Re: Helper Saltwater Disposal Well #1
Notice of First Injection

Gentlemen:

Please find enclosed, in triplicate, form 3160-5 Sundry Notices and Reports on Wells, representing Notice of First Injection for the above referenced well. Also enclosed are copies of UIC Form 6 and UIC Form 3 previously submitted for the months of January 1998 through April 1998 outlining total injection to-date.

Should you require any additional information, or have any questions on what has been presented, please feel free to contact me at (281) 873-1276.

Best regards,

ANADARKO PETROLEUM CORPORATION

Gail Rupert

Gail A. Rupert
Engineering Technician

Enclosures

cc: Bureau of Land Management
Moab District Office
P.O. Box 970
Moab, Utah 84532

Bureau of Land Management
Price River Resources Area
900 North, 700 East
Price, Utah 84501

GAR
TRC – well file
SMF

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING
INJECTION WELL INSPECTION RECORD

Operator: ANADARKO **API:** 43-007-30361

Well Name: HELPER ST. SWD #1 **Field:**

Sec/Twp/Rng: SEC 3, T14S, R10E

County: CARBON

Type of Inspection: Routine MIT Workover Conversion Plugging

Injection Type:

Disposal: WIW **Enhanced Recovery:** **Other:**

Injecting: YES **Shut-In:**

Rate: 2212.1 (bpd) **Totalizer:** 143012.0 (bbls)

Gauges: Tubing YES
Casing NO **Casing Pressure:** UNKNOWN (psig)

Tubing Pressure: 320 (psig) **Housekeeping:** GOOD

Equipment Condition: GOOD

Remarks: NO GASING GAUGE.

Inspector: DENNIS L. INGRAM **Date:** 3/31/99

Time: 11.00 AM

FORM 9

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

5. Lease Designation and Serial Number: ML 45805

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, deepen existing wells, or to reenter plugged and abandoned wells.
Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form for such purposes

6. Indian, Allottee or Tribe Name:

7. Unit Agreement Name:

1. Type of Well: OIL ☐ GAS ☐ OTHER: SALT WATER DISPOSAL

8. Well Name and Number: Helper State SWD #1

2. Name of Operator: Anadarko Petroleum Corporation

9. API Well Number: 43-007-30361

3. Address and Telephone Number: 17001 Northchase Dr., Houston, Texas 77060

10. Field and Pool, or Wildcat: HELPER CBM

4. Location of Well
Footages: 1131' FEL & 2194' FWL
QQ,Sec., T., R., M.: SW/4 OF SEC. 3, T14S, R10E
County: CARBON
State: UTAH

11. **CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

NOTICE OF INTENT (Submit in Duplicate)		SUBSEQUENT REPORT (Submit Original Form Only)	
☐ Abandon	☐ New Construction	☐ Abandon*	☐ New Construction
☐ Repair Casing	☐ Pull or Alter Casing	☐ Repair Casing	☐ Pull or Alter Casing
☐ Change of Plans	☐ Recomplete	☐ Change of Plans	☐ Perforate
☐ Convert to Injection	☐ Perforate	☐ Convert to Injection	☐ Vent or Flare
☐ Fracture Treat or Acidize	☐ Vent or Flare	☐ Fracture Treat or Acidize	☐ Water Shut-Off
☐ Multiple Completion	☐ Water Shut-Off	☐ Other	
☒ Other REQUEST-INCREASE IN MAX INJECTION PRESSURE		Date of work completion	
Approximate date work will start UPON APPROVAL		Report results of **Multiple Completions** and **Recompletions** to different reservoirs on WELL COMPLETION OR RECOMPLETION REPORT AND LOG form.	
		* Must be accompanied by a cement verification report.	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

SEE ATTACHED. Also see F-2 SWD file, 43-007-30555.

A- Logs from F-2 well.
B- X-section
C- Isopach Map
D- Structure map
E- Fracturing Report
Table 1 Data

RECEIVED
FEB 7 2000
DIVISION OF
OIL, GAS AND MINING

13.
Name & Signature: Shad Frazier Title: SHAD M. FRAZIER, PROD. ENGINEER Date: 2/4/00

(This space for State use only)

Injection Pressure Limit = 1350 psi

APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 2-22-00
BY:

(5/94) (See Instructions on Reverse Side)

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

February 8, 2000

Mr. Christopher J. Kierst
State Of Utah
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1220
Salt Lake City, UT 84114

Reference: Helper State A-1 SWD
Carbon County, Utah

Dear Mr. Kierst:

Enclosed in duplicate is a Sundry Notice (Form 9) for the above-referenced well. At this time we are currently requesting that the injection pressure limit for the above referenced well be increased from the current 660 psi to 1350 psi based upon the overlying beds providing adequate protection from invading fluids. All data to back up this request is attached.

Should you require any additional information, you can reach me at (281) 873-1227.

Sincerely,

Shad Frazier
Production Engineer

SMF/tsd
Enclosure

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

February 8, 2000

Mr. Christopher J. Kierst
State Of Utah
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1220
Salt Lake City, UT 84114

Reference: Helper State A-1 SWD
Carbon County, Utah

Dear Mr. Kierst:

Anadarko Petroleum requests an increase in maximum allowable injection pressure for the above referenced well. We feel that the injection permit should be raised above the current 660 psi to 1350 psi. This value is based upon reservoir modeling that shows the Navajo formations leakoff and overlying anhydrite barriers are protecting the surface waters from all injected fluid.

Log Correlation
The lower Carmel anhydrite is an easily defined geological marker in the Unita basin. River Gas has submitted several studies of this reservoir feature when permitting the D-3 through the D-11 injection wells in their Drunkard's Wash Unit. They have correlated these anhydrite layers in the D-3 with gamma ray and bulk density curves to the rest of the injection wells in the field.

These layers are all defined by very high bulk density readings and are easily identified in the Helper State A-1. The first is 8' (5472-5480), second 34' (5518-5552), and the third is 32' (5598-5630).

A cross section, isopach map, and structure map of the Carmel Anhydrite have been submitted with the Sundry application of the Helper Federal F-2 SWD. They show how the anhydrites layer overlays the Navajo in the Unita basin. The Anhydrite layers show continuity across the basin and provide an additional seal to injected fluids in the Navajo formation.

Reservoir modeling

ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE • P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330
TEL. (281) 875-1101

Anadarko

A reservoir model has been designed using stress and rock properties River Gas submitted in their reports from STIMLAB dated September 20,1996 and August 20, 1997. These reports were used for the permitting of the Drunkards Wash D-3 and are on record the Utah's Division of Oil, Gas, And Mining. River Gas's data from their reservoir model and dipole sonic log provided values for Young's modulus, Poisson's ratio, permeability, and closure stress for the corresponding layers and were used in our modeling efforts. The closure stress of the Navajo formation was calculated to 0.56 psi/ft. This value was attained from the step rate test already on file with the state for this well.

Our reservoir modeling work supports the previous work of River Gas that injection into the Navajo sand will not break through the Carmel anhydrite. The enclosed simulation report (Exhibit A) describes what pressures we would expect if we were to inject into the Navajo at rates of 1,3,5,10, and15 BPM. The graph at the end of the report shows that at 15 BPM the surface pressure would exceed 9695 psi, near the burst rating of the tubing. At 15 BPM the reservoir simulator predicts the frac height would not grow more than 130' above the center of the Navajo and would be contained within the formation.

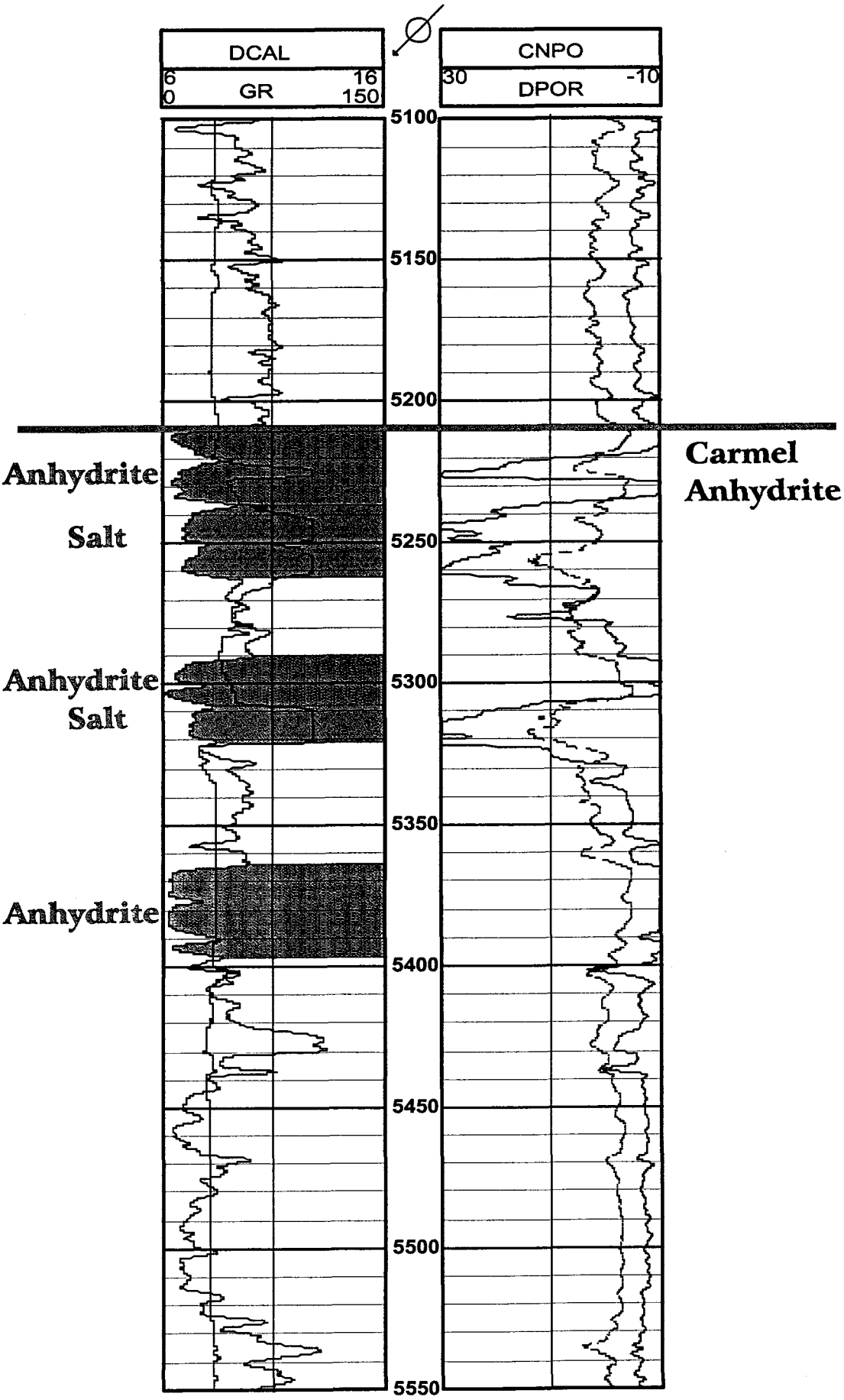
Using the current limit of 1350 psi set by the Department of Oil Gas and Mining the fracture created through the injection of water (As seen in the Exhibit A graphs) would grow to no more than 60 feet from the center of the Navajo and be contained within the formation.

Conclusion

Our analysis shows that the Navajo sands have the capability to absorb injection water at pressures above 1350 psi without breaking into overlying barriers. The Anhydrite layers that do cover the entire area will act as a secondary barrier to excessive fracture height growth. Therefore, we request that the Department of Oil, Gas and Mining grant Anadarko Petroleum the ability to inject at 1350 psi in the Helper State A-1 SWD in Carbon, County, Utah. I would like the opportunity to review any questions you may have at your earliest convenience.

EXHIBIT A

APC
Federal F-2 SWD
Carbon County, Utah
4300730555
KB: 5674



Fracturing Report

Well Name:	Helper Federal F-2 SWD	01/28/200C
Well Location:	Sec 8-14S-10E Carbon County,	
Formation Name:	Navajo, Wingate	
Design Date:	01/24/2000 08:11:56 AM	

Comments:

Results Summary

Fracture Simulation Options

Conventional 3D Model	Vertical Fracture
Run From Job-Design Data	Model Wellbore and Perforations
Proppant Convection	STIMPRO Temperature Model
Lithology Based Reservoir	STIMPRO Acidizing Model

Results Summary

Model has run until (min)	190.50	Fracture efficiency	0.01
Fracture length (ft)	206.84	Propped length (ft)	0.00
Fracture upper height (ft)	176.67	Propped upper height (ft)	0.00
Fracture lower height (ft)	197.95	Propped lower height (ft)	0.00
Max width at well (in)	0.04	Average proppant concetration (lb/ft²)	0.00
Dimensionless Cond. Ratio	0.00		
Total fluid (bbls)	4422.80	Total sand (klbs)	0.00
Min Surface Pressure (psi)	59815.24	Max Surface Pressure (psi)	112368.83
Max Hydraulic Power (hp)	137539.45	Average Hydraulic Power (hp)	39807.36

Dist. from Wellbore (ft)	0000.00	0025.85	0051.71	0077.56	0103.42	0129.27	0155.13	0180.98	0206.84
Width at Center (in)	0000.04	0000.04	0000.04	0000.04	0000.04	0000.03	0000.03	0000.02	0000.00

Run from Design Data Only

Treatment Schedule

Stage #	*Elapsed Time (min:sec)*	*Fluid Type*	*Clean Volume (kgal)*	*Proppant Conc. (ppg)*	*Slurry Rate (bpm)*	*Proppant Type*	*Cumul Time (min:sec)*
Wellbore Fluid		*FRESH WATER*	*1.2*				
1	*23:48*	*FRESH WATER*	*1.0*	*0.00*	*1.00*		*23:48*
2	*47:37*	*FRESH WATER*	*5.0*	*0.00*	*5.00*		*47:37*
3	*71:25*	*FRESH WATER*	*10.0*	*0.00*	*10.00*		*71:25*
4	*95:14*	*FRESH WATER*	*15.0*	*0.00*	*15.00*		*95:14*
5	*119:02*	*FRESH WATER*	*25.0*	*0.00*	*25.00*		*119:02*
6	*142:51*	*FRESH WATER*	*35.0*	*0.00*	*35.00*		*142:51*
7	*166:40*	*FRESH WATER*	*45.0*	*0.00*	*45.00*		*166:40*
8	*190:28*	*FRESH WATER*	*50.0*	*0.00*	*50.00*		*190:28*

Scheduled clean vol (kgal)	***186.00***
Scheduled sand total (klbs)	***0.00***
Scheduled slurry vol (kgal)	***186.00***

Stage #	Elapsed Time (min:sec)	Fluid Type	Stage Slry (kgal)	Cumul Gel (kgal)	Stage Prop (klbs)	Cumul Prop (klbs)	Clean Rate (bpm)
1	23:48	FRESH WATER	1.00	1.00	0.00	0.00	1.00
2	47:37	FRESH WATER	5.00	6.00	0.00	0.00	5.00
3	71:25	FRESH WATER	10.00	16.00	0.00	0.00	10.00
4	95:14	FRESH WATER	15.00	31.00	0.00	0.00	15.00
5	119:02	FRESH WATER	25.00	56.00	0.00	0.00	25.00
6	142:51	FRESH WATER	35.00	91.00	0.00	0.00	35.00
7	166:40	FRESH WATER	45.00	136.00	0.00	0.00	45.00
8	190:28	FRESH WATER	50.00	186.00	0.00	0.00	50.00

Stage #	Elapsed Time (min:sec)	Fluid Type	Cumul Slry (kgal)	Stage N2 (scf)	Cumul N2 (scf)	Stage CO2 (klbs)	Cumul CO2 (klbs)
1	23:48	FRESH WATER	1.00	0.00	0.00	0.00	0.00
2	47:37	FRESH WATER	6.00	0.00	0.00	0.00	0.00
3	71:25	FRESH WATER	16.00	0.00	0.00	0.00	0.00
4	95:14	FRESH WATER	31.00	0.00	0.00	0.00	0.00
5	119:02	FRESH WATER	56.00	0.00	0.00	0.00	0.00
6	142:51	FRESH WATER	91.00	0.00	0.00	0.00	0.00
7	166:40	FRESH WATER	136.00	0.00	0.00	0.00	0.00
8	190:28	FRESH WATER	186.00	0.00	0.00	0.00	0.00

Leakoff Parameters

Reservoir type		User Spec
Filtrate to reservoir fluid perm. ratio, Kp/Kl		10.00
Reservoir pore pressure	(psi)	2,300.00
Initial fracturing pressure	(psi)	5,400.00
Reservoir fluid compressibility	(1/psi)	0.000385
Cold filtrate viscosity	(cp)	1.00
Hot filtrate viscosity	(cp)	1.00
Cold reservoir viscosity	(cp)	0.03
Hot reservoir viscosity	(cp)	0.03
Porosity		0.15
Gas Leakoff Percentage		100.00

Reservoir Parameters

Reservoir temperature	(°F)	131.00
Depth to center of Perfs	(ft)	5,902.00
Perforated interval	(ft)	506.00
Initial frac depth	(ft)	5,825.00

W[redacted]Name:	Helper Feder[redacted]-2 SWD	01/28/2000
Well Location:	Sec 8-14S-10E Carbon County,	
Formation Name:	Navajo, Wingate	
Design Date:	01/24/2000 08:11:56 AM	

Layer Parameters

Lay #	Top of zone (ft)	Stress (psi)	Top of zone (ft)	Young's modulus (psi)	Poisson's ratio	Top of zone (ft)	Total Ct (ft/min½)	PoreFluid perm. (md)
1	0.0	3042	0.0	5.5e+006	0.22	0.0	6.926e-004	5.00e-003
2	4540.0	2376	4540.0	5.0e+006	0.20	4540.0	3.098e-003	1.00e-001
3	4600.0	3199	4600.0	5.5e+006	0.22	4600.0	6.926e-004	5.00e-003
4	4950.0	2587	4950.0	5.0e+006	0.20	4950.0	3.098e-003	1.00e-001
5	5000.0	3420	5000.0	5.5e+006	0.22	5000.0	6.926e-004	5.00e-003
6	5210.0	2625	5210.0	6.0e+006	0.25	5210.0	3.098e-004	1.00e-003
7	5290.0	4236	5290.0	3.0e+006	0.31	5290.0	9.796e-005	1.00e-004
8	5300.0	3561	5300.0	5.5e+006	0.22	5300.0	6.926e-004	5.00e-003
9	5330.0	2674	5330.0	6.0e+006	0.25	5330.0	3.098e-004	1.00e-003
10	5364.0	4302	5364.0	3.0e+006	0.31	5364.0	9.796e-005	1.00e-004
11	5390.0	2626	5390.0	1.0e+006	0.30	5390.0	3.098e-003	1.00e-001
12	5550.0	2796	5550.0	6.0e+006	0.25	5550.0	3.098e-004	1.00e-003
13	5634.0	2676	5634.0	4.7e+006	0.26	5634.0	2.190e-002	5.00e+000
14	6001.0	2775	6001.0	4.6e+006	0.27	6001.0	3.098e-004	1.00e-003
15	6066.0	2937	6066.0	5.4e+006	0.25	6066.0	2.190e-002	5.00e+000
16	6170.0	3085	6170.0	6.0e+006	0.25	6170.0	3.098e-004	1.00e-003

Lithology Parameters

Layer #	Top of zone (ft)	Lithology	Top of zone (ft)	Fracture Toughness (psi·in½)	Top of zone (ft)	Dilatancy Factor
1	0.0	Siltstone	0.0	1000	0.0	1.00
2	4540.0	Sandstone	4540.0	1000	4540.0	1.00
3	4600.0	Siltstone	4600.0	1000	4600.0	1.00
4	4950.0	Sandstone	4950.0	1000	4950.0	1.00
5	5000.0	Siltstone	5000.0	1000	5000.0	1.00
6	5210.0	Shale	5210.0	1500	5210.0	1.00
7	5290.0	Anhydrite	5290.0	1500	5290.0	1.00
8	5300.0	Siltstone	5300.0	1000	5300.0	1.00
9	5330.0	Shale	5330.0	1500	5330.0	1.00
10	5364.0	Anhydrite	5364.0	1500	5364.0	1.00
11	5390.0	Limestone	5390.0	500	5390.0	1.00
12	5550.0	Shale	5550.0	1500	5550.0	1.00
13	5634.0	Navajo	5634.0	1000	5634.0	1.00
14	6001.0	Wingate	6001.0	1000	6001.0	1.00
15	6066.0	Kayenta	6066.0	1000	6066.0	1.00
16	6170.0	Shale	6170.0	1500	6170.0	1.00

Well Trajectory

MD (ft)	TVD (ft)	Incl. (deg)	Azimuth (deg)
0	0	0.0	0.0
100	100	0.0	249.0
200	200	0.0	138.0
300	300	0.0	27.0
400	400	0.0	276.0
500	500	0.0	165.0
600	600	0.0	54.0
700	700	0.0	303.0
800	800	0.0	192.0
900	900	0.0	81.0
1,000	1,000	0.0	330.0
1,100	1,100	0.0	219.0
1,200	1,200	0.0	108.0
1,300	1,300	0.0	357.0
1,400	1,400	0.0	246.0
1,500	1,500	0.0	135.0
1,600	1,600	0.0	24.0
1,700	1,700	0.0	273.0
1,800	1,800	0.0	162.0
1,900	1,900	0.0	51.0
2,000	2,000	0.0	300.0
2,100	2,100	0.0	189.0
2,200	2,200	0.0	78.0
2,300	2,300	0.0	327.0
2,400	2,400	0.0	216.0
2,500	2,500	0.0	105.0
2,600	2,600	0.0	354.0
2,700	2,700	0.0	243.0
2,800	2,800	0.0	132.0
2,900	2,900	0.0	21.0
3,000	3,000	0.0	270.0
3,100	3,100	0.0	159.0
3,200	3,200	0.0	48.0
3,300	3,300	0.0	297.0
3,400	3,400	0.0	186.0
3,500	3,500	0.0	75.0
3,600	3,600	0.0	324.0
3,700	3,700	0.0	213.0
3,800	3,800	0.0	102.0
3,900	3,900	0.0	351.0
4,000	4,000	0.0	240.0
4,100	4,100	0.0	129.0
4,200	4,200	0.0	18.0
4,300	4,300	0.0	267.0
4,400	4,400	0.0	156.0
4,500	4,500	0.0	45.0
4,600	4,600	0.0	294.0
4,700	4,700	0.0	183.0

4,800	4,800	0.0	72.0
4,900	4,900	0.0	321.0
5,000	5,000	0.0	210.0
5,100	5,100	0.0	99.0
5,200	5,200	0.0	348.0
5,300	5,300	0.0	237.0
5,400	5,400	0.0	126.0
5,500	5,500	0.0	15.0
5,600	5,600	0.0	264.0
5,649	5,649	0.0	0.0

Drilled Hole Description

Type	Bit Diam (in)	Eff Diam (in)	Length (ft)	Top MD (ft)	Bottom MD (ft)
Drilled Hole	7.88	7.88	6,200.0	0.0	6,200.0

Casing In Place Description

Type	OD (in)	ID (in)	Weight (lb/ft)	Grade	Length (ft)	Top MD (ft)	Bottom MD (ft)
Cemented Casing	5.50	4.89	15.50	K-55	6,200.0	0.0	6,200.0

Wellbore Configuration

Surface temperature *(°F)* *70*

Temperature rise in w'bore *(°F)* *20*

Segment Length (ft)	Segment Type	Tubing ID (in)	Tubing OD (in)	Casing ID (in)
5557.00	*Tubing*	*2.200*	*2.875*	*4.892*
92.00	*Casing*	*0.000*	*0.000*	*4.892*

Tubular Goods are defined to the TOP of the deepest set of perforations that are being modeled.

Frac #	Top of Perfs TVD (ft)	Bot of Perfs TVD (ft)	Perf Diameter (in)	# of Perfs
1	*5649*	*6155*	*0*	*1500*

Near Wellbore Friction Parameters & Perf Multiplier

Time min:sec	Flow Rate #1 (bpm)	Flow Rate #2 (bpm)	Delta P (psi)	Perf Coeff Multiplier
0:00	*0.00*	*0.00*	*0.00*	*1.00*

Model Parameters

Fracture Growth Parameters (Conventional 3D Model)

Crack Opening Coefficient	0.7000000
Rock Deformation Coefficient	0.4000000
Channel Flow Coefficient	1.0000000

Fluid Radial Weighting Exponent set to default of Rock Deformation Coeff / 10.

Proppant Model Parameters

Minimum Proppant Concentration (lb/ft²)	0.20
Minimum Proppant Diameter (in)	0.008
Volume Fraction of Proppant in Slurry	0.60
Proppant Drag Effect Exponent	8.00
Proppant Radial Weighting Exponent	0.2500
Proppant Convection Coefficient	10.00
Proppant Settling Coefficient	1.00
Stop Model on Screenout	ON
Quadratic Backfill Model	ON

Initial Leakoff Area Coeff	1.00
Closure Leakoff Area Coeff	0.03
Minimum Fracture Height	OFF
Near Wellbore Friction Exponent	0.50

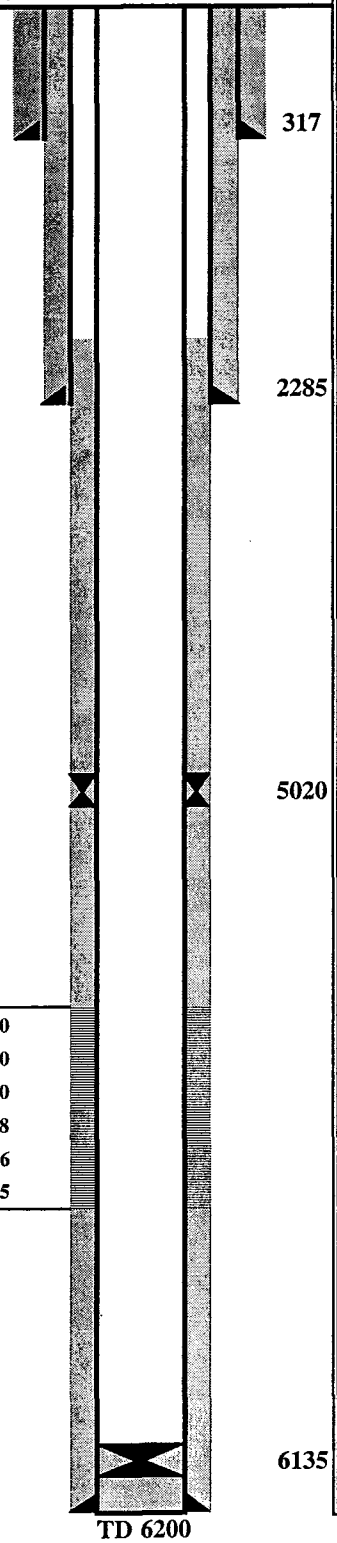
Federal F-2 SWD

1201' FSL & 840' FEL Sec 8-T14S-R10E

Carbon County, Utah

	SPUD	RIG OFF
SURFACE	07/06/1999	07/26/1999
PRODUCTION	11/05/1997	

5659 GL KB



17 1/2" Hole
13 3/8" 48#
Set w/ 340 sxs cmt
Circ 32 bbls of cmt

12 1/4" Hole
8 5/8" 24# K-55
1000 sxs cmt
Circ 70 bbls of cmt

DV Tool

(Holes) Perforations

(244)	5649 -	5710
(400)	5720 -	5820
(448)	5838 -	5950
(160)	5958 -	5998
(176)	6072 -	6116
(48)	6143 -	6155

(1,476) Total Holes

Hole Size 7 7/8"
5 1/2" 15.5# K-55
620 sxs cmt

WELL WORK HISTORY

08/03/1999	Bond Log Run TOC at 2100'. Bottom of 8 5/8 at 2285.

SURFACE STRING — NOTES: Guide shoe and no floats used

13-3/8" 48# - set @ 317

CEMENT: Type: Class G @ 15.6 ppg

Volume: 340 sx — Cement Top: Circ 32 bbls cmt to surf

INTERMEDIATE STRING — FC@ 12620 — NOTES: Bumped plug, floats did not hold

8-5/8" 24# J55 STC - set @ 2285 — FS@ 2285 — State DOGM witnessed

Hole Size: 12.25 — TD: 12714

CEMENT: Type: Hal-Lite @ 12.7 ppg & Class G @ 15.6 ppg

Volume: 750 lead / 250 tail — Cement Top: Circ 70 bbl cement

INJECTION STRING — FC@ 6155 — NOTES: Full returns during cement job

5-1/2" 15.5# K55 LTC - set @ 6200 — FS@ 6200 — Added gilsonite for LC & CCM w/ LCM

Hole Size: 7.875" — TD: 6200 — DV Tool @ 5020'

CEMENT: Type: Hal-Lite @ 12.7 ppg & 50/50 Poz @ 14.4 ppg

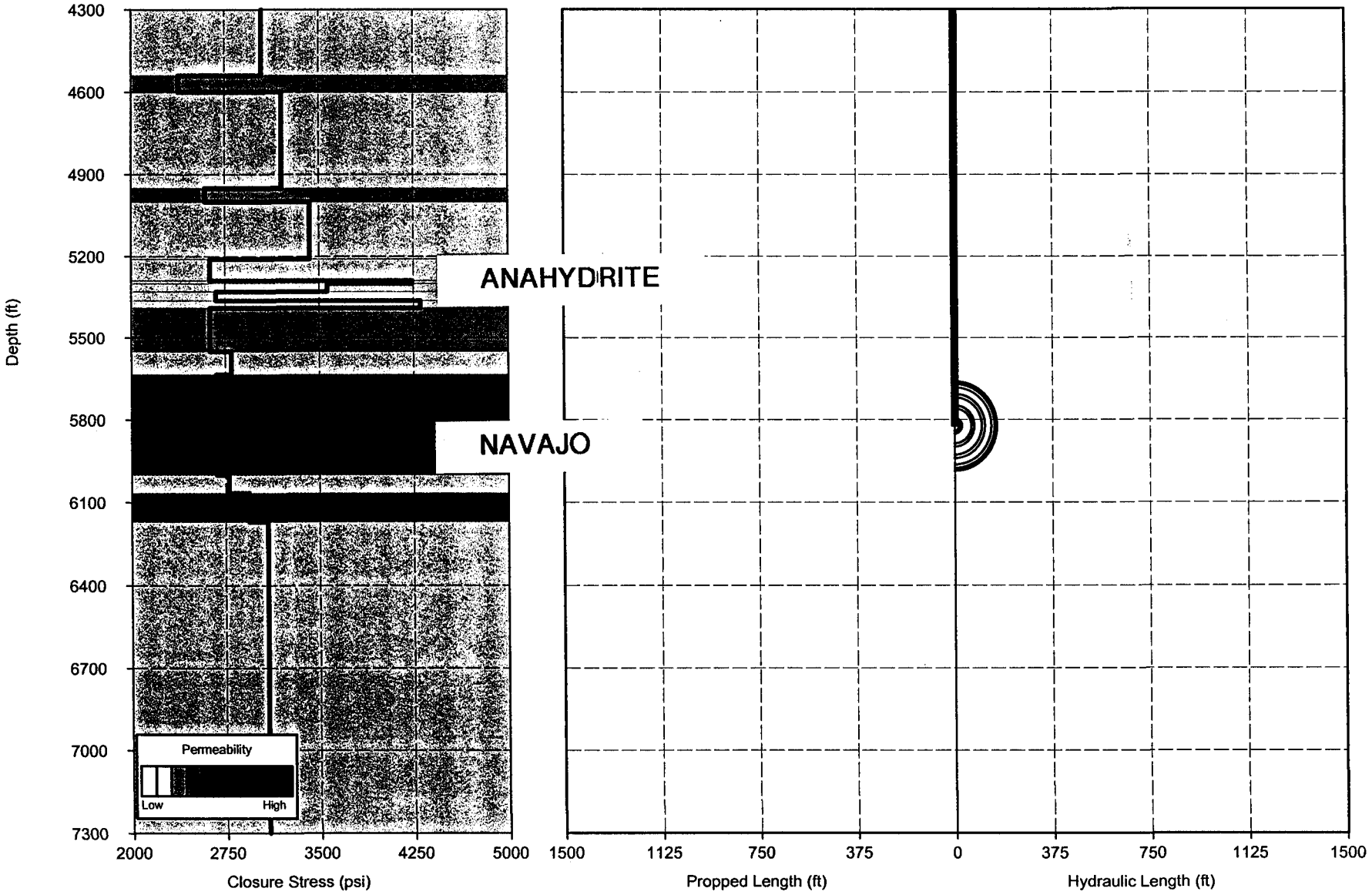
Volume: 1st 200 sx / 2nd 420 sx — Calc. TOC: 1800' est.

DEVIATION ANGLE	
500	4
2121	4 13/20
2466	4 1/4
3254	5
4151	4 3/4
5021	5 1/2
5855	2 1/4

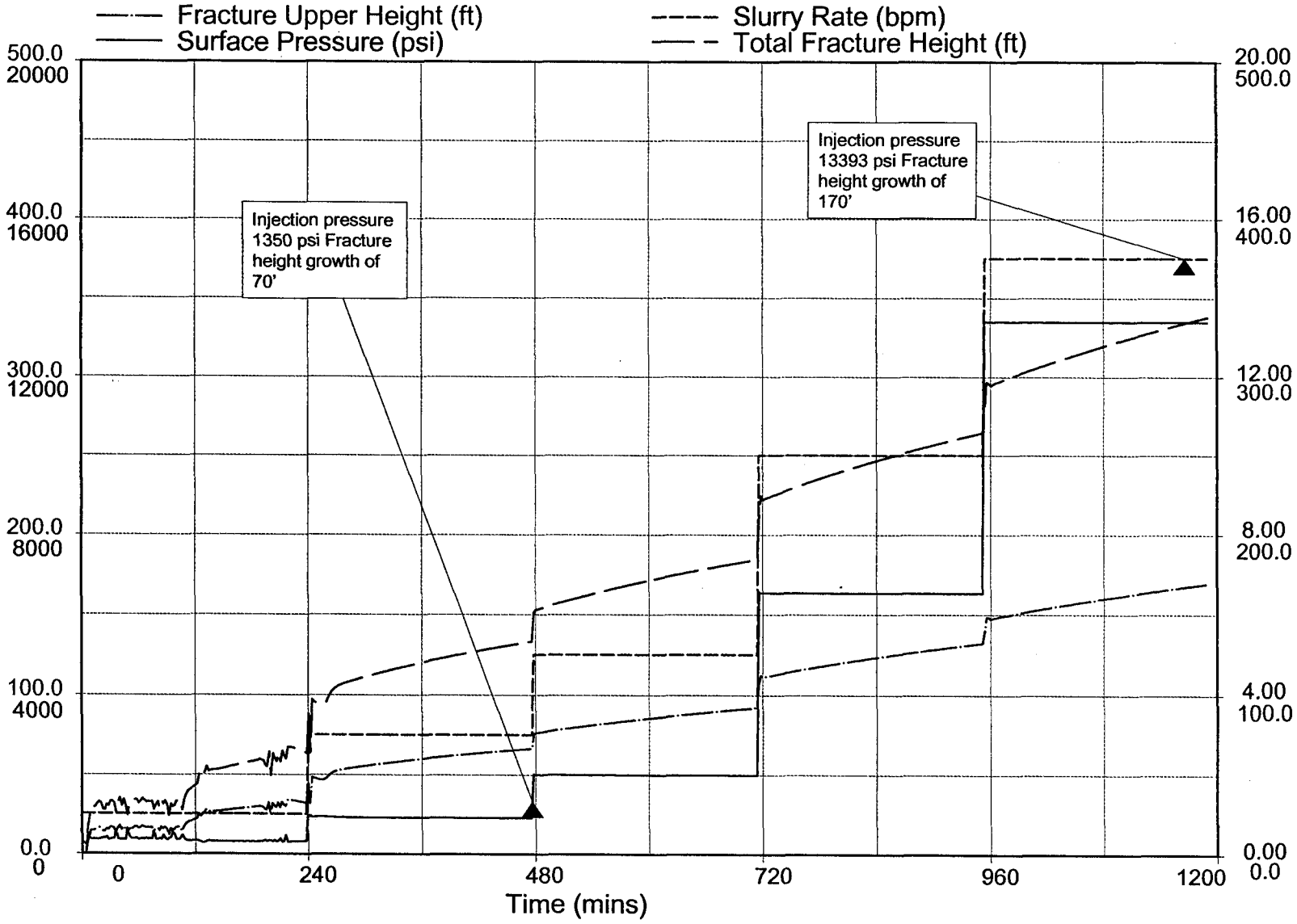
FORMATION	TOP	KB 5674
Lower Carmel Lime	5406	268
Navajo	5634	40
Kayenta	6001	-327
Wingate	6066	-392
Gross interval	369'	

LAST REVISED: 01/14/2000

Helper Federal F-2 SWD



Helper Federal F-2 SWD
Sec 8-14S-10E Carbon County,



Navajo, Wingate

01/24/2000 08:11:56 AM

TABLE 1

API	Well Name	Location	QTR	Sec.	T	R	Co.	Zone	Carmel Anhydrite 1			Carmel Anhydrite 2			Carmel Anhydrite 3			Carmel Anhydrite Gross		
									Top 1	Base 1	Net 1 (ft.)	Top 2	Base 2	Net 2 (ft.)	Top 3	Base 3	Net 3 (ft.)	Top Gross	Base Gross	Net Total Anhyd. (ft.)
4300730040	Drunkards Wash 31-1	1000 FSL 1552 FWL	SESW	31	14S	10E	Carbon	Navaho	5240	5252	12	5306	5353	38	5402	5440	38	5240	5440	88
4300730093	Arcadia-Telonis 1	465 FSL 560 FWL	SESE	18	14S	9E	Carbon	Navaho	6742	6755	13	6818	6825	7	6892	6932	36	6742	6932	56
4300730100	USA D-6	1300 FSL 800 FWL	SWSW	34	14S	9E	Carbon	Navaho	6665	6676	11	6720	6760	32	6812	6848	28	6665	6848	71
4300730290	Utah D-3	1600 FSL 1126 FWL	NWSW	18	15S	10E	Carbon	Navaho	5133	5142	9	5184	5220	28	5270	5304	30	5133	5304	67
4300730314	Utah D-4	600 FNL 500 FWL	NWNW	24	14S	9E	Carbon	Navaho	5590	5600	10	5644	5694	48	5744	5784	40	5590	5784	98
4300730351	Fausett D-5	467 FNL 1461 FWL	NENW	16	14S	9E	Carbon	Navaho	Log Not Avail.			Log Not Avail.			Log Not Avail.			Log Not Avail.		
4300730431	Utah D-8	1342 FNL 350 FWL	SWNW	12	15S	9E	Carbon	Navaho	5594	5604	10	5648	5678	20	5732	5770	38	5594	5770	68
4300730438	Utah D-9	1960 FNL 1487 FWL	SENW	32	14S	9E	Carbon	Navaho	Log Not Avail.			Log Not Avail.			Log Not Avail.			Log Not Avail.		
4300730520	RGC D-10	162 FNL 1557 FEL	NWNE	28	15S	9E	Carbon	Navaho	Log Not Avail.			Log Not Avail.			Log Not Avail.			Log Not Avail.		
4301530338	Utah D-7	1371 FSL 1530 FEL	NWSE	2	16S	9E	Emery	Navaho	Log Not Avail.			Log Not Avail.			Log Not Avail.			Log Not Avail.		
4301530356	USA D-11	1513 FNL 2437 FEL	SWNE	13	16S	9E	Emery	Navaho	Log Not Avail.			Log Not Avail.			Log Not Avail.			Log Not Avail.		
4300730557	Sampinos D-14 ?	(Possible New Well)	NWSE	16	15S	10E	Carbon	Navaho	Log Not Avail.			Log Not Avail.			Log Not Avail.			Log Not Avail.		
4300730555	Federal SWD F-2	1201 FSL 840 FEL	SE SE	8	14S	10E	Carbon		5210	5262	46	5292	5326	34	5364	5396	30	5210	5396	110

VALUES USED FOR ANHYDRITE STRUCTURE

VALUES USED FOR ANHYDRITE NET ISOPACH

COPY

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form for such purposes

5. LEASE DESIGNATION AND SERIAL NUMBER: ML 45805

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT or CA AGREEMENT NAME: N/A

1. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ OTHER: Salt Water Disposal

8. WELL NAME and NUMBER: Helper State SWD #1

2. NAME OF OPERATOR: Anadarko Petroleum Corporation

9. API NUMBER: 43-007-30361

3. ADDRESS OF OPERATOR: 17001 Northchase Dr., Houston, Texas 77060

PHONE NUMBER: 281-874-3441

10. FIELD AND POOL, OR WILDCAT: HELPER CBM

4. LOCATION OF WELL

FOOTAGES AT SURFACE: 1131' FSL & 2194' FWL

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SW/4 OF SEC. 3, T14S, R10E

COUNTY: CARBON

STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☒ NOTICE OF INTENT (Submit in Duplicate)	☐ ACIDIZE	☐ DEEPEN	☐ REFERFORATE CURRENT FORMATION
Approximate date work will start: _____	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
	☐ CASING REPAIR	☐ NEW CONSTRUCTION	☐ TEMPORARILY ABANDON
	☐ CHANGE TO PREVIOUS PLANS	☐ OPERATOR CHANGE	☐ TUBING REPAIR
	☒ CHANGE TUBING	☐ PLUG AND ABANDON	☐ VENT OR FLARE
☐ SUBSEQUENT REPORT (Submit Original Form Only)	☐ CHANGE WELL NAME	☐ PLUG BACK	☐ WATER DISPOSAL
Date of work completion: _____	☐ CHANGE WELL STATUS	☐ PRODUCTION (START/RESUME)	☐ WATER SHUT-OFF
	☐ COMMINGLE PRODUCING FORMATIONS	☐ RECLAMATION OF WELL SITE	☐ OTHER _____
	☐ CONVERT WELL TYPE	☐ RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. (Clearly show all pertinent details including dates, depths, volumes, etc.

Please be advised of change in tubing from 2-7/8" to 3-1/2".
Thank you

Accepted by the Utah Division of Oil, Gas and Mining

FOR RECORD ONLY

NAME (PLEASE PRINT) Jennifer Berlin TITLE Environmental Regulatory Analyst

SIGNATURE _____ DATE 8/8/01

(This space for State use only)

(5\2000) (See Instructions on Reverse Side)

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

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5. LEASE DESIGNATION AND SERIAL NUMBER: ML 45805
6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A
7. UNIT or CA AGREEMENT NAME: N/A
8. WELL NAME and NUMBER: Helper State SWD #1
9. API NUMBER: 43-007-30361
10. FIELD AND POOL, OR WILDCAT: HELPER CBM

1. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ OTHER: Salt Water Disposal

2. NAME OF OPERATOR: Anadarko Petroleum Corporation

3. ADDRESS OF OPERATOR: 17001 Northchase Dr., Houston, Texas 77060
PHONE NUMBER: 281-874-3441

4. LOCATION OF WELL
FOOTAGES AT SURFACE: 1131' FSL & 2194' FWL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SW/4 OF SEC. 3, T14S, R10E
COUNTY: CARBON
STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
[X] NOTICE OF INTENT (Submit in Duplicate)	☐ ACIDIZE	☐ DEEPEN	☐ REFERFORATE CURRENT FORMATION
Approximate date work will start:	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
	☐ CASING REPAIR	☐ NEW CONSTRUCTION	☐ TEMPORARILY ABANDON
	☐ CHANGE TO PREVIOUS PLANS	☐ OPERATOR CHANGE	☐ TUBING REPAIR
☐ SUBSEQUENT REPORT (Submit Original Form Only)	[X] CHANGE TUBING	☐ PLUG AND ABANDON	☐ VENT OR FLARE
	☐ CHANGE WELL NAME	☐ PLUG BACK	☐ WATER DISPOSAL
Date of work completion:	☐ CHANGE WELL STATUS	☐ PRODUCTION (START/RESUME)	☐ WATER SHUT-OFF
	☐ COMMINGLE PRODUCING FORMATIONS	☐ RECLAMATION OF WELL SITE	☐ OTHER
	☐ CONVERT WELL TYPE	☐ RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. (Clearly show all pertinent details including dates, depths, volumes, etc.

Please be advised of change in tubing from 2-7/8" to 3-1/2".
Thank you

Accepted by the Utah Division of Oil, Gas and Mining
FOR RECORD ONLY

NAME (PLEASE PRINT) Jennifer Berlin TITLE Environmental Regulatory Analyst

SIGNATURE [signature] DATE 8/8/01

(This space for State use only)

(5\2000) (See Instructions on Reverse Side)

INSPECTION FORM 6

STATE OF UTAH
DIVISION OF OIL GAS AND MINING

INJECTION WELL - PRESSURE TEST

Well Name: Helper State SWD-1 API Number: 43-007-30361

Qtr/Qtr: _____ Section: 3 Township: 14S Range: 10E

Company Name: Anadarko

Lease: State X Fee _____ Federal _____ Indian _____

Inspector: Mark L. Jones Date: September 5, 2001

Initial Conditions:

Tubing - Rate: _____ Pressure: _____ psi

Casing/Tubing Annulus - Pressure: _____ psi

Conditions During Test:

Time (Minutes)	Annulus Pressure	Tubing Pressure
0	1000	0
5		
10		
15	1000	0
20		
25		
30	1000	0

Results: Pass/Fail

Conditions After Test:

Tubing Pressure: 0 psi

Casing/Tubing Annulus Pressure: 500 psi

COMMENTS: Dick Dietz was very good to work with. Test was underway when I arrived @ 9:30 am. A hand opened a valve without permission thus ending the test prematurely. Mr. Dietz asked that the test be started over @ 9:40 am with 1000# on the annulus. It remained at 1000# during the duration of the Test, (30 min.). Dick asked if he could leave a positive pressure on the backside of this well and at the ok of Mr. Dan Jarvis he left a pressure of 500# on the annulus of this well. I checked this well two days later and found the annulus psi @ 500# and the tubing pressure @ 1250# due to the well injecting at the time of inspection.

Dick Dietz (Anadarko)
Operator Representative

FORM 9

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

5. LEASE DESIGNATION AND SERIAL NUMBER: ML-45805

SUNDRY NOTICES AND REPORTS ON WELLS

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

7. UNIT or CA AGREEMENT NAME: N/A

1. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ OTHER SWD well

8. WELL NAME and NUMBER: HELPER STATE SWD-1

2. NAME OF OPERATOR: ANADARKO PETROLEUM CORPORATION

9. API NUMBER: 4300730361

3. ADDRESS OF OPERATOR: 1201 Lake Robbins Dr CITY The Woodlands STATE TX ZIP 77251-1330

PHONE NUMBER: (832) 636-1000

10. FIELD AND POOL, OR WILDCAT: HELPER

4. LOCATION OF WELL

FOOTAGES AT SURFACE: 1131 FSL, 2194 FWL

COUNTY: CARBON

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: SESW 3 14S 10E S

STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☑ NOTICE OF INTENT (Submit in Duplicate)	☐ ACIDIZE	☐ DEEPEN	☐ REPERFORATE CURRENT FORMATION
Approximate date work will start:	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
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Date of work completion:	☐ CHANGE WELL STATUS	☐ PRODUCTION (START/RESUME)	☐ WATER SHUT-OFF
	☐ COMMINGLE PRODUCING FORMATIONS	☐ RECLAMATION OF WELL SITE	☐ OTHER:
	☐ CONVERT WELL TYPE	☐ RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Water will be gathered from Westport operated gas wells and disposed of in one or more Anadarko operated Water Disposal Wells. The producing zone from the Westport wells will be the Ferron sands and coals. The disposal zone in the Anadarko well(s) will be the Navajo sandstone. The quality of the water associated with the gas production from the Ferron will not be known until the wells are drilled and testing can be conducted, however, it is believed to be non-potable water with a Total Dissolved Solids (TDS) in excess of 10,000 ppm. The water quality of the Navajo sandstone in the disposal well(s) is very poor, and of lower quality than the water from the Ferron. The Navajo water has a TDS in excess of 70,000 ppm.

Approved by the Utah Division of Oil, Gas and Mining
Date: Aug 19, 2003
By:

COPY SENT TO OPERATOR
Date: 8-21-03
Initials: CHD

NAME (PLEASE PRINT) MICHAEL D. HORTON TITLE LANDMAN

SIGNATURE Michael D. Horton DATE 8/18/2003

(This space for State use only)

RECEIVED
AUG 18 2003
DIV. OF OIL, GAS & MINING

(5/2000) (See Instructions on Reverse Side)

INSPECTION FORM 6

STATE OF UTAH
DIVISION OF OIL GAS AND MINING

INJECTION WELL - PRESSURE TEST

Well Name: Helper State SWD-1 API Number: 43-007-30361
Qtr/Qtr: _____ Section: 3 Township: 14S Range: 10E
Company Name: Anadarko Petroleum Corp.

Lease: State X Fee _____ Federal _____ Indian _____
Inspector: M. Jones Date: 9/7/04

Initial Conditions:

Tubing - Rate: 7600 BPD Pressure: 1000# psi

Casing/Tubing Annulus - Pressure: 500# psi

Conditions During Test:

Time (Minutes)		Annulus Pressure	Tubing Pressure
0	9:15	1000 #	1000 #
5			
10			
15	9:30	1000 #	600#
20			
25			
30			

Results: Pass/Fail

Conditions After Test:

Tubing Pressure: 600# psi

Casing/Tubing Annulus Pressure: 700# psi

COMMENTS: Injecting while testing. Pumps kicked off w/ ~ 2 minutes of test remaining.

Kenny Wilcox
Operator Representative

Division of Oil, Gas and Mining

OPERATOR CHANGE WORKSHEET (for state use only)

ROUTING
CDW

X - Change of Operator (Well Sold) Operator Name Change/Merger

The operator of the well(s) listed below has changed, effective: **4/1/2013**

FROM: (Old Operator):	**TO:** (New Operator):
N0035-Anadarko Petroleum Corporation	N3940- Anadarko E&P Onshore LLC
PO Box 173779	PO Box 173779
Denver, CO, 80214	Denver, CO 802014
Phone: 1 (720) 929-6000	Phone: 1 (720) 929-6000

CA No. **Unit:**

WELL NAME	SEC	TWN	RNG	API NO	ENTITY NO	LEASE TYPE	WELL TYPE	WELL STATUS
See Attached List								

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

1. (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 4/9/2013
2. (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 4/9/2013
3. The new company was checked on the **Department of Commerce, Division of Corporations Database on:** 4/10/2013
4a. Is the new operator registered in the State of Utah: _____ Business Number: 593715-0161
5a. (R649-9-2)Waste Management Plan has been received on: Yes
5b. Inspections of LA PA state/fee well sites complete on: 4/10/2013
5c. Reports current for Production/Disposition & Sundries on: 4/10/2013
6. **Federal and Indian Lease Wells:** The BLM and or the BIA has approved the merger, name change, or operator change for all wells listed on Federal or Indian leases on: BLM 4/2/2013 BIA N/A
7. **Federal and Indian Units:**
   The BLM or BIA has approved the successor of unit operator for wells listed on: N/A
8. **Federal and Indian Communization Agreements ("CA"):**
   The BLM or BIA has approved the operator for all wells listed within a CA on: N/A
9. **Underground Injection Control ("UIC")** Division has approved UIC Form 5 Transfer of Authority to **Inject,** for the enhanced/secondary recovery unit/project for the water disposal well(s) listed on: 4/10/2013

DATA ENTRY:

1. Changes entered in the **Oil and Gas Database on:** 4/11/2013
2. Changes have been entered on the **Monthly Operator Change Spread Sheet on:** 4/11/2013
3. Bond information entered in RBDMS on: 4/10/2013
4. Fee/State wells attached to bond in RBDMS on: 4/11/2013
5. Injection Projects to new operator in RBDMS on: 4/11/2013
6. Receipt of Acceptance of Drilling Procedures for APD/New on: N/A

BOND VERIFICATION:

1. Federal well(s) covered by Bond Number: WYB000291
2. Indian well(s) covered by Bond Number: N/A
3a. (R649-3-1) The **NEW** operator of any state/fee well(s) listed covered by Bond Number 22013542
3b. The **FORMER** operator has requested a release of liability from their bond on: N/A

LEASE INTEREST OWNER NOTIFICATION:

4. (R649-2-10) The **NEW** operator of the fee wells has been contacted and informed by a letter from the Division of their responsibility to notify all interest owners of this change on: 4/11/2013

COMMENTS:

FORM 9

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

5. LEASE DESIGNATION AND SERIAL NUMBER: See Wells

SUNDRY NOTICES AND REPORTS ON WELLS

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

7. UNIT or CA AGREEMENT NAME:

1. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ OTHER CBM Wells

8. WELL NAME and NUMBER:

2. NAME OF OPERATOR: Anadarko Petroleum Corporation

9. API NUMBER: See Wells

3. ADDRESS OF OPERATOR: P.O. Box 173779 CITY Denver STATE CO ZIP 80217

PHONE NUMBER: (720) 929-6000

10. FIELD AND POOL, OR WILDCAT:

4. LOCATION OF WELL

FOOTAGES AT SURFACE:

COUNTY:

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:

STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☐ NOTICE OF INTENT (Submit in Duplicate)	☐ ACIDIZE	☐ DEEPEN	☐ REPERFORATE CURRENT FORMATION
Approximate date work will start: 4/8/2013	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
	☐ CASING REPAIR	☐ NEW CONSTRUCTION	☐ TEMPORARILY ABANDON
	☐ CHANGE TO PREVIOUS PLANS	☑ OPERATOR CHANGE	☐ TUBING REPAIR
	☐ CHANGE TUBING	☐ PLUG AND ABANDON	☐ VENT OR FLARE
☐ SUBSEQUENT REPORT (Submit Original Form Only)	☐ CHANGE WELL NAME	☐ PLUG BACK	☐ WATER DISPOSAL
Date of work completion:	☐ CHANGE WELL STATUS	☐ PRODUCTION (START/RESUME)	☐ WATER SHUT-OFF
	☐ COMMINGLE PRODUCING FORMATIONS	☐ RECLAMATION OF WELL SITE	☐ OTHER:
	☐ CONVERT WELL TYPE	☐ RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

The operator is requesting authorization to transfer the wells from Anadarko Petroleum Corporation and Anadarko Production Company to Anadarko E&P Onshore, LLC. Please see the attached list of 181 wells that are currently filed under Anadarko Petroleum Corporation and Anadarko Production Company. The state/fee wells will be under bond number 22013542, and the federal wells will be under bond number WYB000291.

RECEIVED

Effective 4/1/13

APR 09 2013

Please contact the undersigned if there are any questions.

DIV. OF OIL, GAS & MINING

Jaime Scharnowske
Regulatory Analyst

Anadarko Petroleum Corporation N0035
P.O. Box 173779
Denver, CO 80214
(720) 929-6000

Jaime Scharnowske
Regulatory Analyst

Anadarko E&P Onshore, LLC N3940
P.O. Box 173779
Denver, CO 80214
(720) 929-6000

NAME (PLEASE PRINT) Jaime Scharnowske TITLE Regulatory Analyst

SIGNATURE Jaime Scharnowske DATE 4/8/2013

(This space for State use only)

APPROVED

APR 11 2013

DIV. OIL GAS & MINING

Rachel Medina

(5/2000) (See Instructions on Reverse Side)

Anadarko Petroleum Corporation (N0035) to Anadarko E&P Onshore, LLC (N3940)
Effective 1 April-2013

Well Name	Sec	Twnshp	Range	API	Entity No.	Lease Type	Well Type	Well status
HELPER ST SWD 1	03	140S	100E	4300730361	12258	State	WD	A
FED F-2 SWD	08	140S	100E	4300730555	12557	Federal	WD	A
CLAWSON SPRING ST SWD 4	13	160S	080E	4301530477	12979	State	WD	A
CLAWSON SPRING ST SWD 1	36	150S	080E	4300730721	12832	State	WD	I
HELPER FED B-1	33	130S	100E	4300730189	11537	Federal	GW	P
HELPER FED A-1	23	130S	100E	4300730190	11517	Federal	GW	P
HELPER FED A-3	22	130S	100E	4300730213	11700	Federal	GW	P
HELPER FED C-1	22	130S	100E	4300730214	11702	Federal	GW	P
HELPER FED B-5	27	130S	100E	4300730215	11701	Federal	GW	P
HELPER FED A-2	22	130S	100E	4300730216	11699	Federal	GW	P
HELPER FED D-1	26	130S	100E	4300730286	12061	Federal	GW	P
BIRCH A-1	05	140S	100E	4300730348	12120	Fee	GW	P
HELPER ST A-1	03	140S	100E	4300730349	12122	State	GW	P
HELPER ST D-7	04	140S	100E	4300730350	12121	State	GW	P
CHUBBUCK A-1	31	130S	100E	4300730352	12397	Fee	GW	P
VEA A-1	32	130S	100E	4300730353	12381	Fee	GW	P
VEA A-2	32	130S	100E	4300730354	12483	Fee	GW	P
VEA A-3	32	130S	100E	4300730355	12398	Fee	GW	P
VEA A-4	32	130S	100E	4300730356	12482	Fee	GW	P
HELPER ST A-8	02	140S	100E	4300730357	12257	State	GW	P
HELPER ST A-3	02	140S	100E	4300730358	12254	State	GW	P
HELPER ST A-4	02	140S	100E	4300730359	12255	State	GW	P
HELPER ST A-7	02	140S	100E	4300730360	12256	State	GW	P
HELPER ST A-2	03	140S	100E	4300730362	12232	State	GW	P
HELPER ST A-5	03	140S	100E	4300730363	12231	State	GW	P
HELPER ST A-6	03	140S	100E	4300730364	12233	State	GW	P
HELPER ST D-4	04	140S	100E	4300730365	12228	State	GW	P
HELPER ST D-3	05	140S	100E	4300730366	12184	State	GW	P
HELPER ST D-5	04	140S	100E	4300730367	12226	State	GW	P
HELPER ST D-8	04	140S	100E	4300730368	12229	State	GW	P
HELPER ST D-2	05	140S	100E	4300730369	12481	State	GW	P
HELPER ST D-6	05	140S	100E	4300730370	12234	State	GW	P
HELPER ST D-1	06	140S	100E	4300730371	12399	State	GW	P
BIRCH A-2	08	140S	100E	4300730372	12189	Fee	GW	P
HELPER ST A-9	10	140S	100E	4300730373	12230	State	GW	P
HELPER ST B-1	09	140S	100E	4300730376	12227	State	GW	P
HELPER FED F-3	08	140S	100E	4300730378	12252	Federal	GW	P
HELPER FED F-4	09	140S	100E	4300730379	12253	Federal	GW	P
HELPER ST A-10	10	140S	100E	4300730433	12488	State	GW	P
HELPER ST A-11	11	140S	100E	4300730434	12487	State	GW	P
HELPER ST A-12	10	140S	100E	4300730435	12486	State	GW	P
HELPER ST A-13	10	140S	100E	4300730436	12485	State	GW	P
HELPER ST B-2	09	140S	100E	4300730437	12484	State	GW	P
HELPER FED E-7	19	130S	100E	4300730508	13623	Federal	GW	P
HELPER FED B-2	33	130S	100E	4300730530	12619	Federal	GW	P
HELPER FED B-3	33	130S	100E	4300730531	12622	Federal	GW	P
HELPER FED B-4	33	130S	100E	4300730532	12623	Federal	GW	P
HELPER FED B-6	27	130S	100E	4300730533	12644	Federal	GW	P
HELPER FED B-7	27	130S	100E	4300730534	12645	Federal	GW	P
HELPER FED B-8	27	130S	100E	4300730535	12631	Federal	GW	P

Anadarko Petroleum Corporation (N0035) to Anadarko E&P Onshore, LLC (N3940)
Effective1-April-2013

Well Name	Sec	Twnshp	Range	API	Entity No.	Lease Type	Well Type	Well status
HELPER FED B-9	34	130S	100E	4300730536	12646	Federal	GW	P
HELPER FED B-10	34	130S	100E	4300730537	12626	Federal	GW	P
HELPER FED B-11	34	130S	100E	4300730538	12628	Federal	GW	P
HELPER FED B-12	34	130S	100E	4300730539	12627	Federal	GW	P
HELPER FED B-13	28	130S	100E	4300730540	12621	Federal	GW	P
HELPER FED B-14	28	130S	100E	4300730541	12620	Federal	GW	P
HELPER FED D-2	26	130S	100E	4300730542	12650	Federal	GW	P
HELPER FED D-3	26	130S	100E	4300730543	12634	Federal	GW	P
HELPER FED D-4	35	130S	100E	4300730544	12625	Federal	GW	P
HELPER FED D-5	35	130S	100E	4300730545	12637	Federal	GW	P
HELPER FED D-6	35	130S	100E	4300730546	12635	Federal	GW	P
HELPER FED E-1	29	130S	100E	4300730547	13246	Federal	GW	P
HELPER FED E-2	29	130S	100E	4300730548	12636	Federal	GW	P
HELPER FED H-1	01	140S	100E	4300730549	12653	Federal	GW	P
HELPER FED H-2	01	140S	100E	4300730550	12647	Federal	GW	P
OLIVETO FED A-2	08	140S	100E	4300730556	12630	Federal	GW	P
HELPER FED F-1	08	140S	100E	4300730557	12629	Federal	GW	P
SMITH FED A-1	09	140S	100E	4300730558	13004	Federal	GW	P
SE INVESTMENTS A-1	06	140S	100E	4300730570	12624	Fee	GW	P
HELPER ST A-14	11	140S	100E	4300730571	12612	State	GW	P
HELPER ST A-15	11	140S	100E	4300730572	12613	State	GW	P
HELPER ST E-1	36	130S	100E	4300730573	12615	State	GW	P
HELPER ST E-2	36	130S	100E	4300730574	12614	State	GW	P
HARMOND A-1	07	140S	100E	4300730586	12616	Fee	GW	P
HELPER ST E-3	36	130S	100E	4300730592	12868	State	GW	P
HELPER FED A-6	23	130S	100E	4300730593	12649	Federal	GW	P
HELPER FED D-7	26	130S	100E	4300730594	12651	Federal	GW	P
HELPER FED D-8	35	130S	100E	4300730595	12652	Federal	GW	P
CLAWSON SPRING ST A-1	36	150S	080E	4300730597	12618	State	GW	P
HELPER ST E-4	36	130S	100E	4300730598	12825	State	GW	P
HELPER ST A-16	11	140S	100E	4300730603	12638	State	GW	P
CHUBBUCK A-2	06	140S	100E	4300730604	12648	Fee	GW	P
CLAWSON SPRING ST A-2	36	150S	080E	4300730635	12856	State	GW	P
CLAWSON SPRING ST A-3	36	150S	080E	4300730636	13001	State	GW	P
CLAWSON SPRING ST A-4	36	150S	080E	4300730637	12844	State	GW	P
CLAWSON SPRING ST D-5	31	150S	090E	4300730642	12852	State	GW	P
CLAWSON SPRING ST D-6	31	150S	090E	4300730643	12847	State	GW	P
CLAWSON SPRING ST D-7	31	150S	090E	4300730644	12849	State	GW	P
HELPER FED A-5	23	130S	100E	4300730677	13010	Federal	GW	P
HELPER FED A-7	22	130S	100E	4300730678	13346	Federal	GW	P
HELPER FED B-15	28	130S	100E	4300730679	13015	Federal	GW	P
HELPER FED B-16	28	130S	100E	4300730680	13203	Federal	GW	P
HELPER FED C-2	24	130S	100E	4300730681	13016	Federal	GW	P
HELPER FED C-4	24	130S	100E	4300730682	13012	Federal	GW	P
HELPER FED C-7	21	130S	100E	4300730684	13204	Federal	GW	P
HELPER FED D-9	25	130S	100E	4300730685	13245	Federal	GW	P
HELPER FED D-10	25	130S	100E	4300730686	12993	Federal	GW	P
HELPER FED D-11	25	130S	100E	4300730687	12992	Federal	GW	P
HELPER FED D-12	25	130S	100E	4300730688	13005	Federal	GW	P
HELPER FED E-4	29	130S	100E	4300730689	13229	Federal	GW	P

Anadarko Petroleum Corporation (N0035) to Anadarko E&P Onshore, LLC (N3940)
Effective1-April-2013

Well Name	Sec	Twnshp	Range	API	Entity No.	Lease Type	Well Type	Well status
HELPER FED A-4	23	130S	100E	4300730692	13009	Federal	GW	P
HELPER FED C-5	24	130S	100E	4300730693	13013	Federal	GW	P
HELPER FED G-1	30	130S	110E	4300730694	13006	Federal	GW	P
HELPER FED G-2	30	130S	110E	4300730695	13007	Federal	GW	P
HELPER FED G-3	31	130S	110E	4300730696	13002	Federal	GW	P
HELPER FED G-4	31	130S	110E	4300730697	13003	Federal	GW	P
HELPER FED H-3	01	140S	100E	4300730698	12831	Federal	GW	P
HELPER FED H-4	01	140S	100E	4300730699	12833	Federal	GW	P
CLAWSON SPRING ST D-8	31	150S	090E	4300730701	12851	State	GW	P
HELPER FED C-3	24	130S	100E	4300730702	13011	Federal	GW	P
CLAWSON SPRING ST J-1	35	150S	080E	4300730726	13299	Fee	GW	P
PIERUCCI 1	35	150S	080E	4300730727	13325	Fee	GW	P
POTTER ETAL 1	35	150S	080E	4300730728	12958	Fee	GW	P
POTTER ETAL 2	35	150S	080E	4300730737	12959	Fee	GW	P
HELPER FED G-5	30	130S	110E	4300730770	13655	Federal	GW	P
HELPER FED G-6	30	130S	110E	4300730771	13656	Federal	GW	P
HELPER FED G-7	31	130S	110E	4300730772	13657	Federal	GW	P
HELPER FED G-8	31	130S	110E	4300730773	13658	Federal	GW	P
GOODALL A-1	06	140S	110E	4300730774	13348	Fee	GW	P
HELPER FED E-8	19	130S	100E	4300730776	13624	Federal	GW	P
HAUSKNECHT A-1	21	130S	100E	4300730781	13347	Fee	GW	P
HELPER FED E-9	19	130S	100E	4300730868	13628	Federal	GW	P
HELPER FED E-5	20	130S	100E	4300730869	13625	Federal	GW	P
HELPER FED E-6	20	130S	100E	4300730870	13631	Federal	GW	P
HELPER FED E-10	30	130S	100E	4300730871	13629	Federal	GW	P
SACCOMANNO A-1	30	130S	100E	4300730872	13622	Fee	GW	P
HELPER FED E-11	30	130S	100E	4300730873	13630	Federal	GW	P
BLACKHAWK A-2	29	130S	100E	4300730886	13783	Fee	GW	P
BLACKHAWK A-3	20	130S	100E	4300730914	13794	Fee	GW	P
BLACKHAWK A-4	21	130S	100E	4300730915	13795	Fee	GW	P
BLACKHAWK A-1X	20	130S	100E	4300730923	13798	Fee	GW	P
HELPER STATE 12-3	03	140S	100E	4300750070	17824	State	GW	P
HELPER STATE 32-3	03	140S	100E	4300750071	17827	State	GW	P
HELPER STATE 32-36	36	130S	100E	4300750072	17825	State	GW	P
VEA 32-32	32	130S	100E	4300750075	17826	Fee	GW	P
CLAWSON SPRING ST E-7	07	160S	090E	4301530392	12960	State	GW	P
CLAWSON SPRING ST E-8	07	160S	090E	4301530394	12964	State	GW	P
CLAWSON SPRING ST E-3	06	160S	090E	4301530403	12965	State	GW	P
CLAWSON SPRING ST E-1	06	160S	090E	4301530404	12966	State	GW	P
CLAWSON SPRING ST E-2	06	160S	090E	4301530405	12961	State	GW	P
CLAWSON SPRING ST E-4	06	160S	090E	4301530406	12962	State	GW	P
CLAWSON SPRING ST C-1	12	160S	080E	4301530410	12617	State	GW	P
CLAWSON SPRING ST B-1	01	160S	080E	4301530427	12845	State	GW	P
CLAWSON SPRING ST B-2	01	160S	080E	4301530428	12846	State	GW	P
CLAWSON SPRING ST B-3	01	160S	080E	4301530429	12848	State	GW	P
CLAWSON SPRING ST B-4	01	160S	080E	4301530430	12854	State	GW	P
CLAWSON SPRING ST B-5	12	160S	080E	4301530431	12963	State	GW	P
CLAWSON SPRING ST B-8	11	160S	080E	4301530432	12863	State	GW	P
CLAWSON SPRING ST B-9	11	160S	080E	4301530433	12864	State	GW	P
CLAWSON SPRING ST C-2	12	160S	080E	4301530434	12850	State	GW	P

Anadarko Petroleum Corporation (N0035) to Anadarko E&P Onshore, LLC (N3940)
Effective1-April-2013

Well Name	Sec	Twnshp	Range	API	Entity No.	Lease Type	Well Type	Well status
CLAWSON SPRING ST C-4	14	160S	080E	4301530435	13199	State	GW	P
CLAWSON SPRING ST B-7	11	160S	080E	4301530460	12967	State	GW	P
CLAWSON SPRING ST C-6	14	160S	080E	4301530461	13355	State	GW	P
CLAWSON SPRING ST C-3	12	160S	080E	4301530463	12968	State	GW	P
CLAWSON SPRING ST B-6	11	160S	080E	4301530465	12969	State	GW	P
CLAWSON SPRING ST H-1	13	160S	080E	4301530466	13323	State	GW	P
CLAWSON SPRING ST H-2	13	160S	080E	4301530467	12955	State	GW	P
CLAWSON SPRING ST IPA-1	10	160S	080E	4301530468	12956	Fee	GW	P
CLAWSON SPRING ST IPA-2	15	160S	080E	4301530469	13200	Fee	GW	P
CLAWSON SPRING ST E-5	07	160S	090E	4301530470	12971	State	GW	P
CLAWSON SPRING ST G-1	02	160S	080E	4301530471	13014	State	GW	P
CLAWSON SPRING ST F-2	03	160S	080E	4301530472	13282	State	GW	P
CLAWSON SPRING ST F-1	03	160S	080E	4301530473	13278	State	GW	P
CLAWSON SPRING ST E-6	07	160S	090E	4301530474	13052	State	GW	P
CLAWSON SPRING ST G-2	02	160S	080E	4301530475	12957	State	GW	P
CLAWSON SPRING ST M-1	02	160S	080E	4301530488	13201	State	GW	P
CLAWSON SPRING ST K-1	02	160S	080E	4301530489	13202	State	GW	P
SHIMMIN TRUST 3	14	120S	100E	4300730119	11096	Fee	GW	PA
SHIMMIN TRUST 1	11	120S	100E	4300730120	11096	Fee	GW	PA
SHIMMIN TRUST 2	14	120S	100E	4300730121	11096	Fee	GW	PA
SHIMMIN TRUST 4	11	120S	100E	4300730123	11096	Fee	GW	PA
ST 9-16	16	120S	100E	4300730132	11402	State	GW	PA
ST 2-16	16	120S	100E	4300730133	11399	State	GW	PA
MATTS SUMMIT ST A-1	14	120S	090E	4300730141	11273	State	GW	PA
SLEMAKER A-1	05	120S	120E	4300730158	11441	Fee	GW	PA
JENSEN 16-10	10	120S	100E	4300730161	11403	Fee	GW	PA
JENSEN 7-15	15	120S	100E	4300730165	11407	Fee	GW	PA
SHIMMIN TRUST 12-12	12	120S	100E	4300730168	11420	Fee	GW	PA
JENSEN 11-15	15	120S	100E	4300730175	11425	Fee	GW	PA
BRYNER A-1	11	120S	120E	4300730188	11503	Fee	GW	PA
BRYNER A-1X (RIG SKID)	11	120S	120E	4300730209	11503	Fee	GW	PA
BLACKHAWK A-1	20	130S	100E	4300730885	13798	Fee	D	PA
BLACKHAWK A-5H	20	130S	100E	4300731402	17029	Fee	D	PA
CLAWSON SPRING ST SWD 3	06	160S	090E	4301530476	12978	State	D	PA
HELPER FED C-6	21	130S	100E	4300730683	13008	Federal	GW	S
UTAH 10-415	10	160S	080E	4301530391	12632	State	GW	TA

	API Well Number	Well Name	Qtr/Qtr	Section	Township	Range	Mineral Lease Type	Mineral Lease Number	Well Status
1	4300730189	HELPER FED B-1	NESW	33	13S	10E	Federal	USA UTU 71392	Producing
2	4300730190	HELPER FED A-1	C-SW	23	13S	10E	Federal	USA UTU 58434	Producing
3	4300730213	HELPER FED A-3	SESE	22	13S	10E	Federal	USA UTU 58434	Producing
4	4300730214	HELPER FED C-1	SENE	22	13S	10E	Federal	USA UTU 71391	Producing
5	4300730215	HELPER FED B-5	NENE	27	13S	10E	Federal	USA UTU 71392	Producing
6	4300730216	HELPER FED A-2	NESW	22	13S	10E	Federal	USA UTU 58434	Producing
7	4300730286	HELPER FED D-1	SWNE	26	13S	10E	Federal	USA UTU 68315	Producing
8	4300730378	HELPER FED F-3	NENE	8	14S	10E	Federal	USA UTU 65762	Producing
9	4300730379	HELPER FED F-4	NWNW	9	14S	10E	Federal	USA UTU 65762	Producing
10	4300730508	HELPER FED E-7	SESE	19	13S	10E	Federal	USA UTU 77980	Producing
11	4300730530	HELPER FED B-2	SENW	33	13S	10E	Federal	USA UTU 71392	Producing
12	4300730531	HELPER FED B-3	NESE	33	13S	10E	Federal	USA UTU 71392	Producing
13	4300730532	HELPER FED B-4	NENE	33	13S	10E	Federal	USA UTU 71392	Producing
14	4300730533	HELPER FED B-6	NENW	27	13S	10E	Federal	USA UTU 71392	Producing
15	4300730534	HELPER FED B-7	NESW	27	13S	10E	Federal	USA UTU 71392	Producing
16	4300730535	HELPER FED B-8	SESE	27	13S	10E	Federal	USA UTU 71392	Producing
17	4300730536	HELPER FED B-9	SENW	34	13S	10E	Federal	USA UTU 71392	Producing
18	4300730537	HELPER FED B-10	NWNE	34	13S	10E	Federal	USA UTU 71392	Producing
19	4300730538	HELPER FED B-11	SESW	34	13S	10E	Federal	USA UTU 71392	Producing
20	4300730539	HELPER FED B-12	NESE	34	13S	10E	Federal	USA UTU 71392	Producing
21	4300730540	HELPER FED B-13	SWSE	28	13S	10E	Federal	USA UTU 71392	Producing
22	4300730541	HELPER FED B-14	SWSW	28	13S	10E	Federal	USA UTU 71392	Producing
23	4300730542	HELPER FED D-2	SWNW	26	13S	10E	Federal	USA UTU 68315	Producing
24	4300730543	HELPER FED D-3	SESW	26	13S	10E	Federal	USA UTU 68315	Producing
25	4300730544	HELPER FED D-4	NWNW	35	13S	10E	Federal	USA UTU 68315	Producing
26	4300730545	HELPER FED D-5	SESW	35	13S	10E	Federal	USA UTU 68315	Producing
27	4300730546	HELPER FED D-6	NWSE	35	13S	10E	Federal	USA UTU 68315	Producing
28	4300730547	HELPER FED E-1	NESE	29	13S	10E	Federal	USA UTU 71675	Producing
29	4300730548	HELPER FED E-2	SESW	29	13S	10E	Federal	USA UTU 71675	Producing
30	4300730549	HELPER FED H-1	NENW	1	14S	10E	Federal	USA UTU 72352	Producing
31	4300730550	HELPER FED H-2	SESW	1	14S	10E	Federal	USA UTU 72352	Producing
32	4300730556	OLIVETO FED A-2	NESW	8	14S	10E	Federal	USA UTU 65762	Producing
33	4300730557	HELPER FED F-1	SESE	8	14S	10E	Federal	USA UTU 65762	Producing
34	4300730558	SMITH FED A-1	NWSW	9	14S	10E	Federal	USA UTU 65762	Producing
35	4300730593	HELPER FED A-6	SESE	23	13S	10E	Federal	USA UTU 58434	Producing
36	4300730594	HELPER FED D-7	C-SE	26	13S	10E	Federal	USA UTU 68315	Producing
37	4300730595	HELPER FED D-8	NENE	35	13S	10E	Federal	USA UTU 68315	Producing
38	4300730677	HELPER FED A-5	NENE	23	13S	10E	Federal	USA UTU 58434	Producing
39	4300730678	HELPER FED A-7	SENW	22	13S	10E	Federal	USA UTU 58434	Producing
40	4300730679	HELPER FED B-15	SENE	28	13S	10E	Federal	USA UTU 71392	Producing
41	4300730680	HELPER FED B-16	SWNW	28	13S	10E	Federal	USA UTU 71392	Producing
42	4300730681	HELPER FED C-2	NENW	24	13S	10E	Federal	USA UTU 71391	Producing

	API Well Number	Well Name	Qtr/Qtr	Section	Township	Range	Mineral Lease Type	Mineral Lease Number	Well Status
43	4300730682	HELPER FED C-4	NWSW	24	13S	10E	Federal	USA UTU 71391	Producing
44	4300730683	HELPER FED C-6	SWSE	21	13S	10E	Federal	USA UTU 71391	Shut-In
45	4300730684	HELPER FED C-7	SESW	21	13S	10E	Federal	USA UTU 71391	Producing
46	4300730685	HELPER FED D-9	NWNW	25	13S	10E	Federal	USA UTU 68315	Producing
47	4300730686	HELPER FED D-10	SENE	25	13S	10E	Federal	USA UTU 68315	Producing
48	4300730687	HELPER FED D-11	SESW	25	13S	10E	Federal	USA UTU 68315	Producing
49	4300730688	HELPER FED D-12	SESE	25	13S	10E	Federal	USA UTU 68315	Producing
50	4300730689	HELPER FED E-4	NWNE	29	13S	10E	Federal	USA UTU 71675	Producing
51	4300730692	HELPER FED A-4	SWNW	23	13S	10E	Federal	USA UTU 58434	Producing
52	4300730693	HELPER FED C-5	SWNE	24	13S	10E	Federal	USA UTU 71391	Producing
53	4300730694	HELPER FED G-1	C-NW	30	13S	11E	Federal	USA UTU 71677	Producing
54	4300730695	HELPER FED G-2	SWSW	30	13S	11E	Federal	USA UTU 71677	Producing
55	4300730696	HELPER FED G-3	SENW	31	13S	11E	Federal	USA UTU 71677	Producing
56	4300730697	HELPER FED G-4	SESW	31	13S	11E	Federal	USA UTU 71677	Producing
57	4300730698	HELPER FED H-3	SWNE	1	14S	10E	Federal	USA UTU 72352	Producing
58	4300730699	HELPER FED H-4	NESE	1	14S	10E	Federal	USA UTU 72352	Producing
59	4300730702	HELPER FED C-3	SESW	24	13S	10E	Federal	USA UTU 71391	Producing
60	4300730770	HELPER FED G-5	SWNE	30	13S	11E	Federal	USA UTU 71677	Producing
61	4300730771	HELPER FED G-6	SWSE	30	13S	11E	Federal	USA UTU 71677	Producing
62	4300730772	HELPER FED G-7	NWNE	31	13S	11E	Federal	USA UTU 71677	Producing
63	4300730773	HELPER FED G-8	NESE	31	13S	11E	Federal	USA UTU 71677	Producing
64	4300730776	HELPER FED E-8	SENE	19	13S	10E	Federal	USA UTU 77980	Producing
65	4300730868	HELPER FED E-9	SESW	19	13S	10E	Federal	USA UTU 77980	Producing
66	4300730869	HELPER FED E-5	SWSW	20	13S	10E	Federal	USA UTU 71675	Producing
67	4300730870	HELPER FED E-6	SWNW	20	13S	10E	Federal	USA UTU 71675	Producing
68	4300730871	HELPER FED E-10	NENW	30	13S	10E	Federal	USA UTU 71675	Producing
69	4300730873	HELPER FED E-11	NWNE	30	13S	10E	Federal	USA UTU 71675	Producing
70	4300730119	SHIMMIN TRUST 3	SENW	14	12S	10E	Fee (Private)		Plugged and Abandoned
71	4300730120	SHIMMIN TRUST 1	SESE	11	12S	10E	Fee (Private)		Plugged and Abandoned
72	4300730121	SHIMMIN TRUST 2	SENE	14	12S	10E	Fee (Private)		Plugged and Abandoned
73	4300730123	SHIMMIN TRUST 4	SESW	11	12S	10E	Fee (Private)		Plugged and Abandoned
74	4300730158	SLEMAKER A-1	SWNE	5	12S	12E	Fee (Private)		Plugged and Abandoned
75	4300730161	JENSEN 16-10	SESE	10	12S	10E	Fee (Private)		Plugged and Abandoned
76	4300730165	JENSEN 7-15	SWNE	15	12S	10E	Fee (Private)		Plugged and Abandoned
77	4300730168	SHIMMIN TRUST 12-12	NWSW	12	12S	10E	Fee (Private)		Plugged and Abandoned
78	4300730175	JENSEN 11-15	NESW	15	12S	10E	Fee (Private)		Plugged and Abandoned
79	4300730188	BRYNER A-1	NESE	11	12S	12E	Fee (Private)		Plugged and Abandoned
80	4300730209	BRYNER A-1X (RIG SKID)	NESE	11	12S	12E	Fee (Private)		Plugged and Abandoned
81	4300730348	BIRCH A-1	NWSW	5	14S	10E	Fee (Private)		Producing
82	4300730352	CHUBBUCK A-1	NESE	31	13S	10E	Fee (Private)		Producing
83	4300730353	VEA A-1	SWNW	32	13S	10E	Fee (Private)		Producing
84	4300730354	VEA A-2	NENE	32	13S	10E	Fee (Private)		Producing

	API Well Number	Well Name	Qtr/Qtr	Section	Township	Range	Mineral Lease Type	Mineral Lease Number	Well Status
85	4300730355	VEA A-3	SESW	32	13S	10E	Fee (Private)		Producing
86	4300730356	VEA A-4	NWSE	32	13S	10E	Fee (Private)		Producing
87	4300730372	BIRCH A-2	NWNW	8	14S	10E	Fee (Private)		Producing
88	4300730570	SE INVESTMENTS A-1	NESE	6	14S	10E	Fee (Private)		Producing
89	4300730586	HARMOND A-1	SENE	7	14S	10E	Fee (Private)		Producing
90	4300730604	CHUBBUCK A-2	SENW	6	14S	10E	Fee (Private)		Producing
91	4300730726	CLAWSON SPRING ST J-1	SESW	35	15S	8E	Fee (Private)		Producing
92	4300730727	PIERUCCI 1	SENW	35	15S	8E	Fee (Private)		Producing
93	4300730728	POTTER ETAL 1	SWNE	35	15S	8E	Fee (Private)		Producing
94	4300730737	POTTER ETAL 2	NESE	35	15S	8E	Fee (Private)		Producing
95	4300730774	GOODALL A-1	NWSW	6	14S	11E	Fee (Private)		Producing
96	4300730781	HAUSKNECHT A-1	SWNW	21	13S	10E	Fee (Private)		Producing
97	4300730872	SACCOMANNO A-1	NESE	30	13S	10E	Fee (Private)		Producing
98	4300730885	BLACKHAWK A-1	SESE	20	13S	10E	Fee (Private)		Plugged and Abandoned
99	4300730886	BLACKHAWK A-2	NWNW	29	13S	10E	Fee (Private)		Producing
100	4300730914	BLACKHAWK A-3	SENE	20	13S	10E	Fee (Private)		Producing
101	4300730915	BLACKHAWK A-4	NENE	21	13S	10E	Fee (Private)		Producing
102	4300730923	BLACKHAWK A-1X	SESE	20	13S	10E	Fee (Private)		Producing
103	4300731402	BLACKHAWK A-5H	NENE	20	13S	10E	Fee (Private)		Plugged and Abandoned
104	4300750075	VEA 32-32	SWNE	32	13S	10E	Fee (Private)		Producing
105	4301530468	CLAWSON SPRING ST IPA-1	SESE	10	16S	8E	Fee (Private)		Producing
106	4301530469	CLAWSON SPRING ST IPA-2	NENE	15	16S	8E	Fee (Private)		Producing
107	4300730132	ST 9-16	NESE	16	12S	10E	State	ML-44443	Plugged and Abandoned
108	4300730133	ST 2-16	NWNE	16	12S	10E	State	ML-44443	Plugged and Abandoned
109	4300730141	MATTS SUMMIT ST A-1	NWNW	14	12S	9E	State	ML-44496	Plugged and Abandoned
110	4300730349	HELPER ST A-1	SENW	3	14S	10E	State	ST UT ML 45805	Producing
111	4300730350	HELPER ST D-7	NWSW	4	14S	10E	State	ST UT ML 45804	Producing
112	4300730357	HELPER ST A-8	NWSE	2	14S	10E	State	ST UT ML 45805	Producing
113	4300730358	HELPER ST A-3	NWNW	2	14S	10E	State	ST UT ML 45805	Producing
114	4300730359	HELPER ST A-4	NWNE	2	14S	10E	State	ST UT ML 45805	Producing
115	4300730360	HELPER ST A-7	NESW	2	14S	10E	State	ST UT ML 45805	Producing
116	4300730362	HELPER ST A-2	NENE	3	14S	10E	State	ST UT ML 45805	Producing
117	4300730363	HELPER ST A-5	NESW	3	14S	10E	State	ST UT ML 45805	Producing
118	4300730364	HELPER ST A-6	NESE	3	14S	10E	State	ST UT ML 45805	Producing
119	4300730365	HELPER ST D-4	SWNW	4	14S	10E	State	ST UT ML 45804	Producing
120	4300730366	HELPER ST D-3	NENE	5	14S	10E	State	ST UT ML 45804	Producing
121	4300730367	HELPER ST D-5	NWNE	4	14S	10E	State	ST UT ML 45804	Producing
122	4300730368	HELPER ST D-8	SESE	4	14S	10E	State	ST UT ML 45804	Producing
123	4300730369	HELPER ST D-2	NENW	5	14S	10E	State	ST UT ML 45804	Producing
124	4300730370	HELPER ST D-6	SESE	5	14S	10E	State	ST UT ML 45804	Producing
125	4300730371	HELPER ST D-1	NENE	6	14S	10E	State	ST UT ML 45804	Producing
126	4300730373	HELPER ST A-9	SENW	10	14S	10E	State	ST UT ML 45805	Producing

	API Well Number	Well Name	Qtr/Qtr	Section	Township	Range	Mineral Lease Type	Mineral Lease Number	Well Status
127	4300730376	HELPER ST B-1	SWNE	9	14S	10E	State	ST UT ML 47556	Producing
128	4300730433	HELPER ST A-10	NWNE	10	14S	10E	State	ST UT ML 45805	Producing
129	4300730434	HELPER ST A-11	SWNW	11	14S	10E	State	ST UT ML 45805	Producing
130	4300730435	HELPER ST A-12	NWSW	10	14S	10E	State	ST UT ML 45805	Producing
131	4300730436	HELPER ST A-13	NESE	10	14S	10E	State	ST UT ML 45805	Producing
132	4300730437	HELPER ST B-2	NESE	9	14S	10E	State	ST UT ML 47556	Producing
133	4300730571	HELPER ST A-14	SESW	11	14S	10E	State	ST UT ML 45805	Producing
134	4300730572	HELPER ST A-15	SENE	11	14S	10E	State	ST UT ML 45805	Producing
135	4300730573	HELPER ST E-1	SESW	36	13S	10E	State	ST UT ML 45802	Producing
136	4300730574	HELPER ST E-2	SWNW	36	13S	10E	State	ST UT ML 45802	Producing
137	4300730592	HELPER ST E-3	NENE	36	13S	10E	State	ST UT ML 45802	Producing
138	4300730597	CLAWSON SPRING ST A-1	SWSE	36	15S	8E	State	ST UT ML 46106	Producing
139	4300730598	HELPER ST E-4	SWSE	36	13S	10E	State	ST UT ML 45802	Producing
140	4300730603	HELPER ST A-16	SWSE	11	14S	10E	State	ST UT ML 45805	Producing
141	4300730635	CLAWSON SPRING ST A-2	NWNW	36	15S	8E	State	ST UT ML 46106	Producing
142	4300730636	CLAWSON SPRING ST A-3	NESW	36	15S	8E	State	ST UT ML 46106	Producing
143	4300730637	CLAWSON SPRING ST A-4	NWNE	36	15S	8E	State	ST UT ML 46106	Producing
144	4300730642	CLAWSON SPRING ST D-5	NENW	31	15S	9E	State	ML-48226	Producing
145	4300730643	CLAWSON SPRING ST D-6	SWSW	31	15S	9E	State	ML-48226	Producing
146	4300730644	CLAWSON SPRING ST D-7	NWNE	31	15S	9E	State	ML-48226	Producing
147	4300730701	CLAWSON SPRING ST D-8	NWSE	31	15S	9E	State	ML-48226	Producing
148	4300750070	HELPER STATE 12-3	SWNW	3	14S	10E	State	ST UT ML 45805	Producing
149	4300750071	HELPER STATE 32-3	SWNE	3	14S	10E	State	ST UT ML 45805	Producing
150	4300750072	HELPER STATE 32-36	SWNE	36	13S	10E	State	ST UT ML 45802	Producing
151	4301530391	UTAH 10-415	NENE	10	16S	8E	State	ST UT ML 48189	Temporarily-Abandoned
152	4301530392	CLAWSON SPRING ST E-7	SENE	7	16S	9E	State	ST UT ML 48220-A	Producing
153	4301530394	CLAWSON SPRING ST E-8	SWSE	7	16S	9E	State	ST UT ML 48220-A	Producing
154	4301530403	CLAWSON SPRING ST E-3	SENE	6	16S	9E	State	ST UT ML 48220-A	Producing
155	4301530404	CLAWSON SPRING ST E-1	SENW	6	16S	9E	State	ST UT ML 48220-A	Producing
156	4301530405	CLAWSON SPRING ST E-2	NESW	6	16S	9E	State	ST UT ML 48220-A	Producing
157	4301530406	CLAWSON SPRING ST E-4	NWSE	6	16S	9E	State	ST UT ML 48220-A	Producing
158	4301530410	CLAWSON SPRING ST C-1	SWNW	12	16S	8E	State	ST UT UO 48209	Producing
159	4301530427	CLAWSON SPRING ST B-1	NENW	1	16S	8E	State	ST UT ML 48216	Producing
160	4301530428	CLAWSON SPRING ST B-2	NWSW	1	16S	8E	State	ST UT ML 48216	Producing
161	4301530429	CLAWSON SPRING ST B-3	NWNE	1	16S	8E	State	ST UT ML 48216	Producing
162	4301530430	CLAWSON SPRING ST B-4	SESE	1	16S	8E	State	ST UT ML 48216	Producing
163	4301530431	CLAWSON SPRING ST B-5	SWSW	12	16S	8E	State	ST UT ML 48216	Producing
164	4301530432	CLAWSON SPRING ST B-8	SENE	11	16S	8E	State	ST UT ML 48216	Producing
165	4301530433	CLAWSON SPRING ST B-9	NWSE	11	16S	8E	State	ST UT ML 48216	Producing
166	4301530434	CLAWSON SPRING ST C-2	SENE	12	16S	8E	State	ST UT UO 48209	Producing
167	4301530435	CLAWSON SPRING ST C-4	SWNW	14	16S	8E	State	ST UT UO 48209	Producing
168	4301530460	CLAWSON SPRING ST B-7	NWSW	11	16S	8E	State	ST UT ML 48216	Producing

	API Well Number	Well Name	Qtr/Qtr	Section	Township	Range	Mineral Lease Type	Mineral Lease Number	Well Status
169	4301530461	CLAWSON SPRING ST C-6	SENE	14	16S	8E	State	ST UT UO 48209	Producing
170	4301530463	CLAWSON SPRING ST C-3	C-SE	12	16S	8E	State	ST UT UO 48209	Producing
171	4301530465	CLAWSON SPRING ST B-6	NENW	11	16S	8E	State	ST UT ML 48216	Producing
172	4301530466	CLAWSON SPRING ST H-1	NENW	13	16S	8E	State	ST UT ML 48217-A	Producing
173	4301530467	CLAWSON SPRING ST H-2	NENE	13	16S	8E	State	ST UT ML 48217-A	Producing
174	4301530470	CLAWSON SPRING ST E-5	NENW	7	16S	9E	State	ST UT ML 48220-A	Producing
175	4301530471	CLAWSON SPRING ST G-1	NWNW	2	16S	8E	State	ST UT ML 46314	Producing
176	4301530472	CLAWSON SPRING ST F-2	NESE	3	16S	8E	State	ST UT ML 48515	Producing
177	4301530473	CLAWSON SPRING ST F-1	SENE	3	16S	8E	State	ST UT ML 48514	Producing
178	4301530474	CLAWSON SPRING ST E-6	SESW	7	16S	9E	State	ST UT ML 48220-A	Producing
179	4301530475	CLAWSON SPRING ST G-2	NESW	2	16S	8E	State	ST UT ML 46314	Producing
180	4301530488	CLAWSON SPRING ST M-1	NWNE	2	16S	8E	State	ST UT ML 47561	Producing
181	4301530489	CLAWSON SPRING ST K-1	SESE	2	16S	8E	State	ST UT ML 46043	Producing

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

UIC FORM 5

TRANSFER OF AUTHORITY TO INJECT

Well Name and Number	API Number
See Wells	See Wells
Location of Well	Field or Unit Name
Footage : County :	Lease Designation and Number
QQ, Section, Township, Range: State : UTAH	

RECEIVED
APR 09 2013
DIV. OF OIL, GAS & MINING

EFFECTIVE DATE OF TRANSFER: 4/1/2013

CURRENT OPERATOR

Company: Anadarko Petroleum Corporation
Address: P.O. Box 173779
city Denver state CO zip 80217
Phone: (720) 929-6000

Name: Jaime Scharnowske
Signature: Jaime Scharnowske
Title: Regulatory Analyst
Date: 4/8/2013

Comments: The operator is requesting authorization to transfer the wells from Anadarko Petroleum Corporation to Anadarko E&P Onshore, LLC. The state wells will be under bond number 22013542, and the federal well will be under bond number WYB000291.

NEW OPERATOR

Company: Anadarko E&P Onshore, LLC
Address: P.O. Box 173779
city Denver state CO zip 80217
Phone: (720) 929-6000

Name: Jaime Scharnowske
Signature: Jaime Scharnowske
Title: Regulatory Analyst
Date: 4/8/2013

Comments:

(This space for State use only)

Transfer approved by: Dan Jarvis
Title: UIC Geologist

Approval Date: 4/10/13

Comments:

(5/2000)

API Well Number	Injection Permit Number	Well Name	Section	Township	Range	Mineral Lease Type	Current Well Status	Well Type
4300730361	UIC-201.1	HELPER ST SWD 1	3	14S	10E	ML 45805	Active	Water Disposal Well
4301530477	UIC-266.1	CLAWSON SPRING ST SWD 4	13	16S	8E	ML 48217	Active	Water Disposal Well
4300730555	UIC-243.1	FED F-2 SWD	8	14S	10E	UTU 65762	Active	Water Disposal Well
4300730721	UIC-264.1	CLAWSON SPRING ST SWD 1	36	15S	8E	ML 46106	Inactive	Water Disposal Well

GARY R. HERBERT
Governor
GREGORY S. BELL
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

April 23, 2013

Anadarko E&P Onshore, LLC
1099 18th St. #1800
Denver, CO 80202
Attn: Luke Urban

14S 10E 3

SUBJECT: Pressure Test for Mechanical Integrity, Helper ST SWD 1 (API# 43-007-30361) Well, Carbon County, Utah:

To Whom It May Concern:

The Underground Injection Control Program, which the Division of Oil, Gas and Mining (DOGM) administers in Utah, requires that all Class II injection wells demonstrate mechanical integrity. Rule R649-5-5.3 of the Oil and Gas Conservation General Rules requires that the casing-tubing annulus above the packer be pressure tested at a pressure equal to the maximum authorized injection pressure or 1,000 psi, whichever is lesser, provided that no test pressure is less than 300 psi. This test shall be performed at least every five-year period beginning October 1982. The following well requires a current test:

Helper ST SWD 1 43-007-30361

Please make arrangements and ready wells for testing during the week of May 20th, 2013, as outlined below:

1. Operator must furnish connections, and accurate pressure gauges, hot oil truck (or other means of pressuring annulus), along with personnel to assist in opening valves, etc.

2. The casing-tubing annulus shall be filled prior to the test date to expedite testing, as each well will be required to hold pressure for a minimum of 15 minutes.

3. If mechanical difficulties or workover operations make it impossible for the well(s) to be tested on this date the test(s) may be rescheduled.

4. Company personnel should meet a DOGM representative(s) at the field office or other location as negotiated.

5. All bradenhead valves with exception of the tubing on the injection well(s) must be shut-in 24 hours prior to testing.

Please contact me at (435) 820-0862 to arrange a meeting time and place or to negotiate a different date, if the date(s) specified is unacceptable.

Sincerely,

Bart Kettle
Environmental Scientist

bk/dj/js

cc: Dan Jarvis, Operations Manager
Well File